



# Amateur Radio

OCTOBER, 1960

VOL. 28

No. 10

## AEGIS NEW PRODUCTS

*Latest releases in*

### HI-FI STEREO EQUIPMENT

available from your local  
Aegis dealer or from . . .

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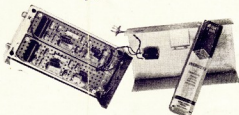
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(Top right) **Aegis STEREO SIX-88 AMPLIFIER.** This ultra-linear integrated amplifier has a choice of three inputs—stereo, monaural, radio tuner. Full 16 watts of power—two independent 8-watt amplifiers in one chassis. Six double-valves plus two silicon diodes. **Retail price, £79/12/6.** Fully ventilated bookshelf cabinet, an optional extra at £6/10/0.

(Centre right) **Aegis NEW IMPROVED Mark 2 TUNER in BOOKSHELF CABINET.** Power supply from existing amplifier through voltage-dropping adaptor supplied. Alternatively, an outboard power supply available (Aegis Type PS 2) and can be fitted directly to tuner. **Retail price, £16/11/6.**

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## NOW TURN TO PAGE 28 FOR

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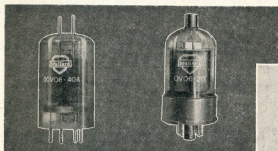
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QY4-250	4-250A	CV2131	V.H.F. Power Tetrode	85F	5-0 14-0	4000	250	1000 75
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The Wireless Institute of Australia was founded in 1910 to promote interest in Amateur Radio. Today each State has its own Division who is responsible for intrastate matters. Each elects a member to Federal Council who delegates to Federal Executive the task of implementing their decisions on interstate matters. The Federal Executive is nominated by Victorian Division and these nominations are ratified by all Divisions.

Any person with an interest in Amateur Radio or Short Wave Listening may join the W.I.A. It is not necessary to possess an Amateur transmitting licence. Enquiries for membership should be made to the Secretary of the appropriate Division. Various affiliated clubs are in operation and transmitter hunts, s.w.l. meetings, v.h.f. groups and scrambles, etc., all form part of their activities, full details of which may be obtained upon application. All financial members of the W.I.A. regularly receive a copy of "A.R.," the cost of which is included in the membership fee.

The W.I.A. is a non commercial society with honorary office-bearers. Every Sunday the Divisions make official broadcasts from their WI transmitters and these sessions are designed to bring to all interested parties the news and views of that Division. Scheduled broadcast times are given below.

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# Editorial



## AMATEUR RADIO IS OUR HERITAGE

Words which might well be termed the Magna Carta of the Amateur Transmitter were once spoken in the House of Commons, words which set a precedent for which Amateurs throughout the Empire should be eternally grateful.

They were spoken in the year 1904 by the late Lord Derby, who as Postmaster-General during his second reading speech, brought about the first Wireless Telegraphy Bill. His words are worth recording for posterity because without his positive and futuristic outlook, Amateur Radio might never have been.

He spoke these words:

"The class with whom I have the greatest sympathy," he said, "are those who wish to go in for experiments in the science of wireless, and I have been able to frame a clause which will give absolute freedom in that direction, merely requiring registration on the part of those who wish to engage in experiments. In a matter of this description the House will doubtless desire that the Act should be administered as liberally as possible, and I shall certainly do my best in that direction. For what it is worth, I will give an undertaking that no request for a license for experiments be refused unless the refusal has been approved by me personally."

This delightfully simple state of affairs did not, of course, prevail, which in these modern times is quite understandable. But it was this legislation which gave to the then technically minded people the opportunity to conduct the early experiments from which Amateur Radio was born; and from then on it was the Amateurs who lead the way in proving that world-wide communication was not only possible but offered to the commercial world an unbelievable medium for communication.

For those generations which followed, "wireless" was an accepted part of living in the same way that the generation born today will accept television and other marvels of the current scientific age. And yet if we look backwards and realise the advancement in only fifty years of wireless and its allied fields, we can most certainly say that we have only touched on the possibilities of the future. Lord Derby envisaged the possibilities when he liberalised the first Wireless Telegraphy Bill so that technically interested people could experiment unhindered by regulations. Regulations were, of course, ultimately necessary, and as far as Amateurs are concerned experimenting is confined to the bands above 30 Mc. Nevertheless, Amateurs have proved their worth in the bands below 30 Mc. in a manner not thought about in 1904, and with more liberalised thinking on the part of those who administer the current Wireless Telegraphy Act, the Amateurs can go on being of service to Australia in many fields other than experimenting as it was known in the era at the turn of the century.

We have a heritage which, because of our relatively limited number, becomes clouded by the overwhelming contributions to our science by instrumentalities with unlimited financial resources. Our heritage is something for which we can be justly proud; a heritage worth fighting for. Let us all remember that we have it in our own hands to contribute something in the overall picture, and we should never let anyone forget it.

FEDERAL EXECUTIVE.

ANNUAL EDITION

"A.R." OCTOBER 1960

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# THE TUNNEL

R. L. WATTERS

**T**HE tunnel diode reported in 1958 by Japanese scientist Dr. Leo Esaki, is an entirely new semiconductor device. It is like a diode because it has two terminals and like a transistor since it may be used to amplify power.

Although related to the transistor, the tunnel diode operates upon a different principle and offers advantages not found in transistors. Some of these are its very small size, extreme speed and stability under varying temperature conditions.

It is a new circuit element which may, with appropriate circuitry, function as a switch, amplifier and oscillator. Amplification and oscillation are possible well into microwave frequencies. At lower frequencies tunnel diode circuits may be simpler, smaller or more efficient than those of vacuum tubes or transistors. Let's see what this tunnel diode is and how it can be used in different circuit applications.

This new device gets its name from a mechanism called "quantum-mechanical tunneling" (until now of only theoretical interest) which describes the manner in which electrical charges move through the device. The combination of this "tunnel effect" and the fact that the device comprises a p-n junction between two regions of very heavily doped semiconductor material has led to the name tunnel diode.

## NEGATIVE RESISTANCE

The property of the tunnel diode produced by the tunnel effect is the negative resistance which appears over a portion of its voltage range. A negative resistance may be defined as a circuit element in which current decreases with increase in voltage (or vice versa). This negative-resistance property is illustrated in Fig. 1, which shows the current-voltage characteristic of a typical germanium tunnel diode at room temperature. The negative-resistance region of the curve lies between points A and B.

The slope of this curve at any point is the resistance of the tunnel diode at that point. A vertical region (infinite increase in current), for example, would indicate zero resistance while a horizontal region (no increase in current) would indicate an infinitely large resistance. In addition, a region which slopes upward to the right indicates a positive resistance while a region which slopes upward to the left indicates a negative resistance. An examination of the curve of Fig. 1 shows that the region from zero to A represents a positive resistance, the region from A to B represents the negative resistance and the region beyond B again represents a positive resistance. The current-voltage characteristic of the tunnel diode, therefore, has a region of negative resistance between two regions of positive resistance.

While the tunnel diode is related to the transistor, the semiconductive mate-

rial used is much more heavily doped with impurity than that used for transistors. It is almost metallic, and no hermetic seal is necessary for protection from such things as surface contamination and moisture penetration.

A p-n junction formed between a heavily doped body of p-type conductivity and a heavily doped body of n-type conductivity semiconductive material is very narrow, about one-millionth of an inch or less. It is this combination, with the proper forward bias, that allows a "tunnel" current to flow and produces the negative resistance. All we need to know about this tunnel current is that its transit time is so short that it does not affect the maximum operating frequency of the diode. This frequency limit is set by the junction capacitance and negative resistance of the device and the bulk resistance of the material from which it is made. A diode was recently made to oscillate at 10,000 Mc. However, for known materials, the calculated maximum frequency of oscillation is 20,000 to 30,000 Mc.

Now, how do we use the tunnel diode in a circuit? The current-voltage characteristic described above and shown in Fig. 1 is the key. Since the slope at any point of this curve is the resistance of the diode, this property of the diode may be conveniently determined from it. For example, the resistance at point

D in Fig. 1 is  $\frac{0.115}{-0.00011} = -1045$  ohms.

Notice again that between A and B the diode is a negative resistance, that is, the current decreases with increase in voltage. At points A and B, however, the resistance is very high. We can see this on the curve itself. In the vicinity of A and B there is little or no change in current with changes in voltage.

The location of points A and B of the curve are set mainly by the semiconductive material from which the tunnel diode is made. For germanium, the voltage at A is typically about 0.05 volt and at B 0.3. For silicon, on the other hand, the voltages are 0.07 and

0.4, respectively. Other materials have somewhat different values. However, all are in the forward voltage range of less than 1 volt.

## PROPERTIES

To understand how to use the tunnel diode in various circuit arrangements, it will be useful to first explore some of its electrical properties. It will be convenient, therefore, to refer to the simple series circuit arrangement of Fig. 3. Then, in conjunction with Fig. 2, we will analyze the operation of the tunnel diode.

A current-voltage characteristic of a typical tunnel diode is shown in Fig. 2. The current through it is shown with respect to the voltage  $E$ , across its terminals. Since the circuit of Fig. 3 is a simple series arrangement, the voltage  $E$ , at any time is equal to the battery voltage  $E$  minus the voltage drop in the resistance  $R$ . It would be very useful, therefore, also to know the current flowing in resistance  $R$  with respect to the voltage drop in it. Load line F in Fig. 2 shows just this relation and a very useful tool is available from it. The intersection of line F with the voltage axis shows the battery supply voltage  $E$  while its intersection with the diode characteristic curve shows the voltage  $E$ .

Load line F may be used to represent the resistance  $R$  in the circuit of Fig. 3. While the slope of this line is negative and it appears at first that there is a decrease in current with increase in voltage, it must be remembered that the load line F does not show the current flowing in the resistance with respect to the voltage supplied, as is the case for the diode characteristic. Rather, it shows the current flowing with respect to the voltage drop in the resistance. For this reason, this negative slope is not to be confused with the negative-resistance region (A-B) of the diode characteristic.

The slope of load line F is determined by resistance  $R$  so that, having drawn

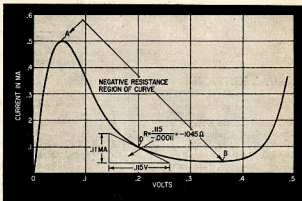


Fig. 1—Typical germanium tunnel-diode characteristic.

# DIODE STORY\*

and J. V. CLAEYS

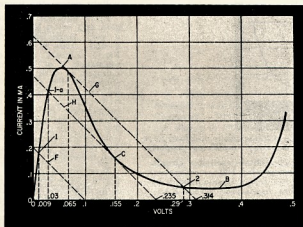


Fig. 2—Tunnel-diode characteristic with load lines for 500-ohm resistor in circuit of Fig. 3.

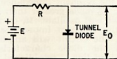


Fig. 3—Basic tunnel-diode circuit.

a particular load line on the diode characteristic, one can easily find the resistance (R) necessary to establish it. For example, to find the R necessary to get load line F in Fig. 1, the slope is found from the voltage and current values taken from the curve. Line F's slope is equal to  $\frac{0.1}{-0.0002} = -500$ .

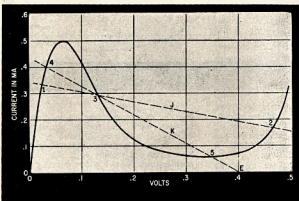
The value of resistance R is +500 ohms since, as stated above, the negative slope does not concern us here.

For the condition shown,  $E = 0.1$  volt,  $E_0 = 0.009$  volt and the current is 0.18 mA. Therefore, with the above values, the point of operation of the diode (for the circuit of Fig. 3), will be as shown at 1 in Fig. 2. Although the slope of this load line is fixed by the resistance R in the circuit of Fig. 3, a change in the battery supply voltage will change its location with respect to the current-voltage characteristic.

Now, let us increase the battery supply voltage. As this is done the load line moves up along the branch 0-A. When the intersection (or  $E_0$ ) reaches a point near A, as shown by the load line G, the intersection ( $E_0$ ) jumps almost instantly to the point 2 between B and C. Point 2 represents the new value of voltage  $E_0$ .

If now we decrease the battery supply voltage  $E_0$ , the load line and its intersection will move toward the point C. Here it switches suddenly to the point 1-a on load line H and the lower value of voltage  $E_0$ . Notice that the slope of the load line remains the same, since resistor R was fixed at 500 ohms

Fig. 4—Tunnel-diode characteristic and load lines of switching property.



and only the position of the line along the voltage axis changes with change in battery supply voltage.

Load lines G and H show the battery supply voltages as 0.314 and 0.235 at the respective switching points. This shows that, as the battery voltage  $E_0$  was increased from zero,  $E_0$  increased to 0.065 volt and then very suddenly switched to 0.29 volt. This is an increase in voltage across the diode ( $E_0$ ) of 0.225 volt. Reducing the battery voltage to 0.235 volt then caused  $E_0$  to switch suddenly from a value of 0.155 to 0.03 volt. This is a decrease in voltage across the diode terminals of 0.125 volt. Thus, we see that near the switching points A and C a very small change in the battery voltage produced a relatively

large voltage change across the diode. This property of the tunnel diode indicates one area of its usefulness.

## SWITCHING

Load line J in Fig. 4 (using the circuit of Fig. 3) represents a value of resistance much higher than the negative resistance of the diode. Notice that this load line intersects the characteristic in both positive resistance regions. Thus there are two stable operating points for a single battery voltage  $E_0$ . The voltage across the diode can be either that corresponding to point 1 or that corresponding to point 2.

To show that only points 1 and 2 are stable, look at Fig. 4 and load line J. Now imagine for a moment that the current and voltage have values corresponding to point 3. If, for any reason whatsoever (motion of electrons, heat or anything else), there is a very small increase in the current, then by looking at the characteristic curve we can see that there must be a decrease in the voltage across the diode.

A look at the circuit shows us that, if this happens, there is more voltage available to send current through the resistance which causes a further decrease in the voltage across the diode. This action continues until point 1 is reached. At point 1, however, if there

is to be any further increase in the current, there must also be an increase in the voltage across the diode since this is a positive resistance region. The only way the voltage across the diode can increase, of course, is for the voltage drop in resistance R to decrease. And this is possible only if the current becomes smaller. The operating point then must remain at 1 and be stable there.

The same thing would happen with any small decrease in current from that at point 3 so that the point would be then stable only at 2. This shows us that it is possible to provide a circuit arrangement which can be quickly changed from one impedance condition to another. For example, when the

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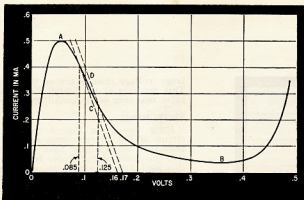


Fig. 5—Characteristic and load lines illustrating amplifying property.

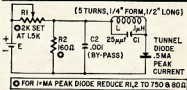
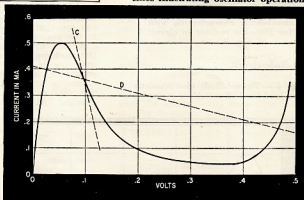


Fig. 6—Tunnel-diode oscillator circuit. Values given are for 100-mc operation. Unit may be frequency-modulated by 2,000-ohm headphone across R2.

Fig. 7—Characteristics and load lines illustrating oscillator operation.



$$(1) e_o = \frac{e(-R_s)}{R + (-R_s)}$$

$$\text{or gain} = \frac{e_o}{e} = \frac{(-R_s)}{R + (-R_s)}$$

where  $e$  is a small a.c. voltage in series with the battery and  $e_o$  is the a.c. voltage across the tunnel diode.

From equation (1) we see that the gain is 1 when  $R = 0$  and increases to a very large value as  $R$  approaches  $(-R_s)$ . This is shown graphically in Fig. 5. Lines C and D correspond to a resistance  $R$  of 150 ohms and battery voltages of 0.16 and 0.17 volts, or a change of 0.01 volt. At the same time we see that the voltage across the tunnel diode is 0.085 and 0.125 volt, respectively, or a change of 0.04 volt. Therefore, the gain  $= 0.04 \div 0.01 = 4$ . We also see that, as the slopes of the lines C and D approach that of region A-B of the diode characteristic, the gain increases.

Now let us consider the circuit of Fig. 6. This arrangement can function as an amplifier or an oscillator, depending on the resonant impedance of the L-C circuit. Assume first that  $R_s$  is adjusted so that the diode has a negative resistance,  $-R_s$ , and that  $R_s$  is smaller than  $R$ , so that we will prevent switching. If the resonant impedance of the L-C circuit is made greater than  $R_s$ , then the circuit will oscillate. If, on the other hand, the resonant impedance is less than  $R_s$ , the circuit will amplify. Fig. 7 shows the diode characteristic with the d.c. load line C established by resistances  $R_s$  and  $R$ , and the a.c. load line D due to the resonant impedance of the L-C circuit in order for the circuit to function as an oscillator.

An important thing in regard to this is that the amplitude of the oscillation will build up until the average negative resistance of the diode just equals the positive resistance of the circuit at the operating frequency. For our purposes, (Continued on Page 14)

diode operates at point 1, it is in its low-impedance state and a relatively large current may flow. When operating at point 2, it is in a higher-impedance state and the current is limited to a relatively low value.

Selecting a load line such as K in Fig. 4 with its corresponding battery voltage  $E$  will indicate how this change may be made more significant. For example, the current at point 4 on load line K for a germanium diode of about 0.5 mA. peak current is 0.3 mA. and the slope indicates an impedance of about 150 ohms. However, the current at point 5 is 0.055 mA. and the slope indicates a very high impedance. Thus, the diode can be employed to switch impedances, currents or voltages if desired.

To use the tunnel diode as an amplifier or an oscillator, we must prevent it from switching. When we look at the diode characteristic curve we realize that, for this to be done, the value of resistor  $R$  must be less than the negative resistance of the diode. That is, the load line established by resistance  $R$  must have a steeper (more vertical) slope than the slope of the negative-resistance region between A-B (Fig. 1).

Such a load line is shown as C in Fig. 5. It always has only one intersection with the diode characteristic, making it possible to have an average bias in the negative-resistance region. The slope of region A-B for a typical germanium tunnel diode having a peak current at point A of about 1 mA. is about  $-100$ . Hence its negative resistance will be 100 ohms.

If now we choose a tunnel diode with a junction area 10 times as large (so that the peak current is 10 mA.), we find that the slope of the region A-B is steeper and the negative resistance is reduced to only 10 ohms. From this we can see that, as the diode's peak current increases, resistance  $R$  must decrease to prevent switching.

## AMPLIFICATION

Now how can the tunnel diode amplify? Refer to Fig. 3 again and assume that the diode is biased somewhere between the points A and B and has a load line such as shown at C on the characteristic of Fig. 5 so that it looks like a negative resistance. This negative resistance is indicated as  $(-R_s)$ . Then:



An f.m. transmitter built around a tunnel diode. The microphone is in the upper right corner and the battery is covered by it. The tunnel diode is to the left of the mike.

# Transistorised Converter for Mobile Work

S. E. MOLEN,\* VK2SG

## —the easy way

IT would appear from general observation that more and more people are going mobile each day, and with the roads and cars getting better, the trips are getting longer, which means more and more fun for the mobilisers, which is as it should be. Various types of whips, transmitters and receivers are being constructed and used with varying degree of success.

Whips and transmitters are a field that books have been written about, and still everyone has their own ideas. Which leaves us with only the receiver to worry about, with some of the commercial car radios turning to hybrid and transistor, it is felt that we must follow this trend.

Let us firstly consider hybrid types of converters. The first thing we need is filament voltage and current. The best we appear to be able to do is 6.3v. at 300 mA., which has to come from the car battery and has to be filtered to get rid of ignition and other noises.

★ Adapt your car radio for Amateur reception by using this Converter. Even the XYL will not object to this one.

So it is good, now let's consider a car b.c. receiver. Most of them are 1 to 1½ microvolt sensitive, signal-to-noise ratio is excellent, selectivity is, in most cases, 35 to 40 db. down 4 Kc. off the signal and the stability is excellent. So what's all this got to do with transistors? Well mainly this: using the car b.c. set as the second i.f., you have a very good potential for a communication receiver. All you need ahead of it is a good, stable, sensitive converter that is simple to build, without any outside power connections and no complications.

The converter about to be described was started at 1330 hours one rainy

afternoon, and this will hold good for all transistors. Well I guess the best way to consider the troubles is to point out what not to do with or near transistors.

One of the safest ways to work with transistors in new gear that you are building is to use sockets (there are sockets available for transistors, in Sydney Philips have them). They are a three-pin plug-in type and can be chassis mounted. Using these sockets, one can remove the transistor before each soldering job. One point with these sockets, the transistor can be plugged in either way, so mark the chassis for the correct polarity of the transistor.

When soldering transistorised gear, keep heat away from the transistors, they come unstuck very easy when they get hot. So keep the bit of the iron small and keep the heat radiation down. Use 12-gauge copper wire as the bit.

Do not use an iron with a.c. on the bit, such as Scope, etc. The a.c. can get into the transistors and they don't like a.c. voltage.

When checking the circuitry, do not use an ohm-meter while the transistors are in circuit as it is very easy to apply reverse voltage with an ohm-meter.

Before connecting the batteries, check the polarity of the battery, reverse voltage will kill the transistors. Positive goes to earth.

Connect a milliamp. meter in series with the battery lead and keep your eye on it while making adjustments. Too much current can cause a runaway transistor and that's another one gone!

Don't try to increase the sensitivity by increasing the voltage beyond the maker's specifications, this can also cause a run-away.

And finally, don't use a g.d.o. on your coils with the transistors in circuit. As you will realise a g.d.o. puts out a fair bit of r.f. and the transference of energy to a resonant coil is quite large and this could cause damage to the transistor.

So there are your possible troubles, all of which can be overcome by using sockets and removing the transistors before making any soldering or troublesome adjustments to your gear.

### PERFORMANCE

Now having got all that digested, that is the construction problem overcome, what other worries do we have with transistors? So we go back to noise, etc., etc. I fear you may have been given the wrong slant somewhere. At audio frequencies, transistors do show a relatively poor noise figure and it is very hard to get an amplifier to show better than -45 db, but at r.f. do

L5-B.c. band r.f. coil.  
L6-30 turns No. 33 enam., close wound on cold end of L5.  
NE-2-Neon from Command Receiver aerial terminal. (See text.)

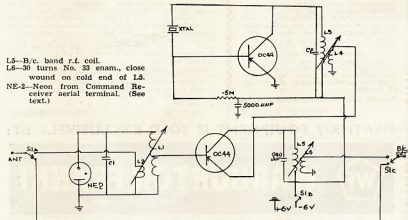


Fig. 1—Circuit of Transistorised Converter.

As you see, it is starting to get difficult before we even get around to coils or h.t.

Alright, let's forget the hybrid types and pick up another train of thought—transistors. Now before you throw the book in the corner and sneer, "Transistors, they're no good, too noisy, no gain, too hard to use, etc., etc." let's look at your communication receiver. Is it one microvolt sensitive? What is the signal-to-noise ratio, better than 15 db.? Selectivity better than 40 db. down 4 Kc. off the signal? And lastly, what is the stability?

afternoon and, having wound the coils and wired the converter completely, it was in the car and working by 1700 hours that same rainy afternoon, which proves it must be simple.

Let's see how simple it is. What does it consist of? One crystal, one resistor, two transistors, three coils and four condensers, plus a switch and various nuts, bolts and a few bits of wire, batteries and that's it. Beat that, you value happy chappies.

### CARE OF TRANSISTORS

Before getting on with the converter itself, let's think a little about the troubles one has while building tran-

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28 Mc.	L1—12 turns, No. 20 enam. tap at 4th turn. L2—2 turns, No. 20 enam. L3—12 turns, No. 20 enam. L4—2 turns, No. 24 enam.	15	15	9283 Kc. 3rd overtone	650-1600 Kc.
21 Mc.	L1—15 turns, No. 20 enam. tap at 5th turn. L2—3 turns, No. 20 enam. L3—15 turns, No. 20 enam. L4—2 turns, No. 24 enam.	15	15	6783 Kc. 3rd overtone	650-1100 Kc.
14 Mc.	L1—23 turns, No. 24 enam. tap at 6th turn. L2—3 turns, No. 24 enam. L3—26 turns, No. 24 enam. L4—3 turns, No. 24 enam.	15	15	4450 Kc. 3rd overtone	650-1000 Kc.
7 Mc.	L1—35 turns, No. 28 enam. tap at 10th turn. L2—6 turns, No. 28 enam. L3—40 turns, No. 28 enam. L4—4 turns, No. 28 enam.	33	33	6350 Kc.	650-950 Kc.
4 Mc.	L1—58 turns, No. 40 enam. tap at 16th turn. L2—8 turns, No. 33 enam. L3—80 turns, No. 33 enam. L4—5 turns, No. 35 enam.	40	40	2850 Kc.	650-1150 Kc.
1.8 Mc.	L1—140 turns, No. 40 en. tap at 25th turn. L2—10 turns, No. 36 enam. L3—100 turns, No. 36 en. L4—10 turns, No. 36 enam.	40	40	2700 Kc.	700-900 Kc.

Table 1.—Coil Information.

these figures worry us? Is their a communications set where, with the aerial terminals shorted to earth, you could get better figures than 30 db. noise? and that noise is coming from the i.f. valves, coils, audio, etc. So what of the —45 db. noise? Not much good for broadcast stations maybe, but certainly better than most communications sets, so it appears as though noise is not the problem.

**Sensitivity** is equal to, and in most cases, better than the usual run of r.f. and mixer valves.

**Stability**—As we have no warm-up period, we have no heat drift, and as with this unit it is crystal locked, so all we have to consider is the drift of the b.c. receiver which is small enough to be disregarded.

Considering all the above points, it rather looks as though our mobile receiver is starting to look like a good communications receiver without some of the refinements such as crystal gates, b.f.o. and S meter, etc., but very useable as a mobile unit with no worry regarding power supply.

#### SIMPLICITY

Having overcome your horror of transistors, I hope, let us consider the transistorized mobile converter. As with all converters for mobile work they must be small, efficient, simple and able to be set up in the car without complicated power connections. This unit is built in one section of an AR7 coil box so that with a complete AR7 plug-in unit, one could have four converters complete with batteries for each unit. Small enough?

The crystal controlled converter described in this article has many features that should appeal to the mobile operator as well as to the experimenter who is interested in transistor circuitry. One of the most interesting characteristics of the circuit is the simplicity. It is crystal controlled, fixed tuned converter which can be made very compact and exhibits excellent performance when used in conjunction with the automobile receiver. With the popular Q5-er from the Command set series, it proves equally effective, though slight modification to the oscillator frequency is necessary. This should also be a particular attraction to the novice who desires additional bandspread for 80 and 40 metres.

All the components for the converter are housed in a small minibox that can be concealed behind the dashboard of the car. This contributes to much better family relations in cases where

the XYL objects to the many dangling devices that some of us so frequently mount in plain sight under the dash.

Special consideration was given to the stability of the unit. For this reason the author decided to incorporate crystal controlled on the oscillator circuit. This not only contributes to stable operation but reduces the complexity of the initial adjustment.

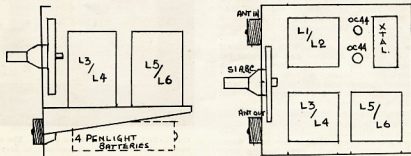
The oscillator circuit is a transistorized version of the ever popular triode Pierce. There is nothing tricky about the operation. Injection for the mixer is taken from a small link which is wound over the cold end of the oscillator tank coil. The emitter of the mixer transistor is returned to ground through this link. The mixer circuit corresponds to a triode vacuum-tube mixer utilising cathode injection from the oscillator, the major difference being the low input impedance of the transistor base as compared with the relatively high input impedance of a vacuum-tube grid. The crystal used in the oscillator portion of the converter is of the surplus variety for fundamental operation. Although many surplus crystals lend themselves to overtone operation quite readily, the author has experienced difficulty on various occasions in getting some of them to oscillate easily in the overtone mode, and more satisfactory results should be obtained by using overtone crystals for 20, 15 and 10 metre operation.

The inductances are wound on slug tuned forms and shunted with the capacitances shown in Table 1.

The circuit shows a NE-2 neon connected from the high impedance end of L1 to ground, this gives a measure of protection for the mixer transistor in the event that an unsafe amount of r.f. energy is introduced into the converter. A zener diode, such as the ZA-6, may be substituted for the NE-2 and will break down at a lower voltage (6) to give better protection.

The converter requires 6 volts d.c. for operation and takes on the order of 2 mA. of current. For all practical purposes, four penlite cells, series connected seem to be logical choice for powering the unit. The choice of dry cells serves two important purposes. First, it eliminates one of the prime sources of ignition interference, various noises from the electrical system of the car are carried into the converter via the leads which supply power to it. By using self-contained batteries, this possibility is eliminated. The second appealing feature from the

(Continued on Page 23)



Figs. 2 and 3.—Suggested layout drawn for a 3" square chassis, to fit a 3" cube box.

# VK2AQU Mark I.

C. G. HARVEY\*

★ Proof that single sideband gear can be built by any Amateur. This article may tempt you to cut your carrier and join the ranks of sidebanders.

LOOKED at the cost of Commercial 100 watt p.e.p. s.s.b. stations lately? Sure they look nice, but the change out of a thousand db. wouldn't buy a life membership of the Institute!

If you have a junk box, and perhaps a fiver or so for an audio p.s.n., and the inevitable odd capacitor and resistor, etc., whose value never seems to be in the box when wanted, you too can have a kiloquids' worth of fun.

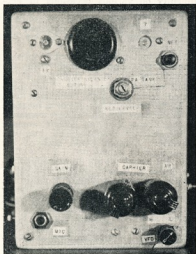


Fig. 2.—Front view of the exciter. The tuning indicator has been removed. Note the interlock push switch at top right for easy checks on netting accuracy. Simple enough?

Probably, like I was in 1958, you have been frightened off s.s.b. by theoretical articles on lattice filters or linear amps., or even by the fear that a shack full of test gear is necessary to get going. This happened to me until my old friend, Bud VK2AQJ, provoked me into belated action with well aimed VOX tactics. Another c.w. operator bit the dust for certain, when, after a week-end's work, a few old tubes, potentiometers and old fashioned 1 watt carbons produced a VOX which worked like a charm first up.

It is not the intention here to sell s.s.b. or to give a nut by volt description of VK2AQJ circuitry, but rather to show one way that it has been done, successfully, without ever having seen

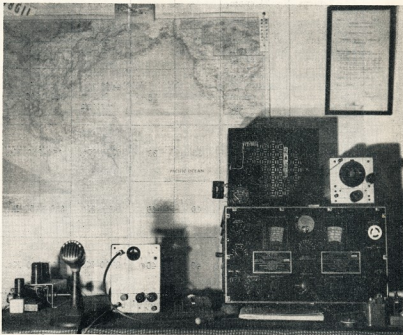


Fig. 1.—VK2AQU 1960. The VOX can be seen at the left of the s.s.b. exciter. The small unit in front of the VOX is the 1,000 c.p.s. tone oscillator. Two important aids to s.s.b. operation are the Teledex and egg-timer (centre). The field strength meter provides a continuous check on speech level.

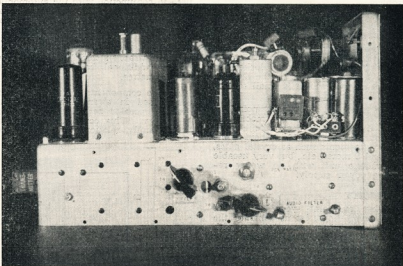


Fig. 3.—Left hand view of the chassis. The metal film cassette next to the 12K8 signal mixer was an after-thought found necessary to keep induced r.f. from the p.a. out of the low level grid circuit. The audio filter label refers to the slugs of two t.v. width coils used as a low pass filter. The magic eye fits in above the shielded xtal and the p.a.n. at the right of the chassis.

\* 52 McCauley Avenue, Glenbrook, N.S.W.

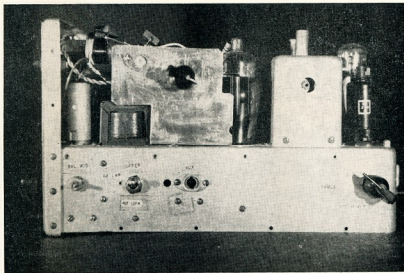


Fig. 4.—Right hand view. The 1625 was used intentionally to bring the plate tank circuitry above deck level. One of the balanced modulators can be seen at the left.

another s.s.b. rig. This isn't to say I would do it again this way, but my initial experiences may consolidate your own views. Lots of a.m. stations have expressed interest in s.s.b., but because they don't really yet know what is involved, are hesitant about committing themselves.

The accompanying photos and drawings may give them the necessary incentive to "have a go" particularly as the station has been active long enough for many Amateurs to know how it performs. Table 1 is the heart of the problem because once you know what levels you are dealing with, any competent Amateur can use the components he has available to get the stage gains necessary. Simply remember that experimenting is not encouraged in the critical audio p.s.n., where changes of 1 degree in phase shift (or 1% in audio gain in the p.p. stage after the network) will adversely affect the unwanted sideband suppression. With the figures mentioned, you should get about 40 db. suppression, although half this is useable (but not desired) on the bands at present. However, I strongly suggest you spend a couple of db. on the Australian Aswel commercial network, and remove any doubt as to eventual performance. This then is the only unavoidable expense.

Anything that is serviceable can be put to use in the rest of the gear, pride permitting. My pride permits me to use some components that put VK3UO on the air in 1936—so don't be bashful. In fact VK3 Amateurs who remember Renn Millar and Charlie Vaude might sense that the exciter front panel is an old aluminium acetate disk of these pre-war minstrels.

Another critical field is bias and drive. Treat the exciter as though it was a hi-fi amp., run it Class A, and quietly at that; keep the load impedance correct and low, keep it stable, and give it lots of reservoir capacity in the power supply.

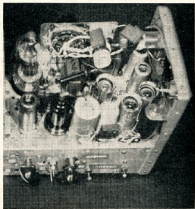


Fig. 4a.—Part of top view of the chassis.

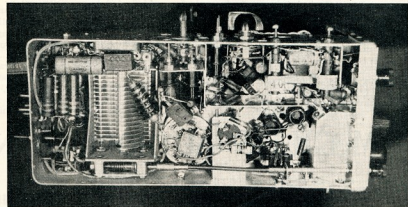


Fig. 5.—Don't let this frighten you off! A bit of thought in wiring procedure and shields cut to allow bottom layer components to lie in the best direction, do the trick. The r.f. p.s.n. can be seen top left, and the completely shielded balanced modulator circuitry is next door. The point one, bottom right, was needed to shift a 7 Mc. resonance in the h.t. wiring!

#### TYPICAL TEST CONDITIONS

Audio input	0.15v., 1,000 c.p.s.
Bal. Mod. inputs	0.35v. and 0.58v., 1,000 c.p.s.
Signal mix., grid	1.2v., 8.8 Mc.
Signal mix., plate	2v., 7 Mc.
Buffer plate	6½v., 7 Mc.
Driver plate	125v., 7 Mc.
VOX input	4v., 1,000 c.p.s.
V.f.o. output	8v., 5 Mc.
Signal Mixer injection	1½v., 1.6 Mc.
P.s.n. inputs	0.1v. and 0.6v., 1,000 c.p.s.
Balanced audio outputs	1.1v. and 1.3v., 1,000 c.p.s.
HT. on load	300v. d.c.
Cut off bias	200v. d.c.
Mixer cathode	34v. d.c.
Driver cathode	21v. d.c.

All measurements made with high grade v.t.v.m., with audio level set to arbitrary level, below flat topping point.

\* Swamped by 4.7K.

Table 1.—The real trick to getting going on s.s.b.—knowing what to expect!

No one circuit will suit everybody, so play about with the many ideas that fill the pages of the A.R.R.L. Sideband Handbook and the "CQ" Sideband Handbook.

I used a Command chassis simply as a matter of convenience. You can find space to bandswitch three bands if you try hard, but I decided to remove the third band when more shielding was needed than originally provided. Best put the shields in first and be sure, rather than find them necessary later and have no room! Treat the exciter like the r.f. end of a hot receiver and there'll be no trouble that swamping or loading won't cure. Don't forget the field from the s.s.b. generator is fairly strong and can get into low level mixer and balanced modulators unless tied down with aluminium.

V.f.o. stability is a re-requisite. There must be negligible random drift otherwise resolved speech quality will suffer and of course long term stability must be better than 100 c.p.s. if you want to

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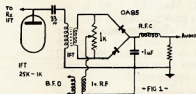
# Product Detector/Balanced Demodulator

LESTER A. EARNSHAW,\* ZLIAAX

## THE SIMPLEST YET!

Recent investigations into the balanced modulator for single sideband reception showed this circuit to be even simpler than the product detector. (In actual fact, of course, there's little difference between the two. Both mix the signal with the b.f.o. and extract the wanted difference. Perhaps a more exact definition is that the product detector output is the arithmetical product of the two inputs, whereas the demodulator output is the geometrical mean of the two inputs. And even this does not always apply! But that's by the bye!)

A balanced modulator is familiar to most. We use it to modulate the carrier and then we balance out the carrier and leave but the two sidebands (which makes a delightfully simple double sideband rig). Note that the balanced modulator performs two separate functions: (a) it mixes the audio with the carrier, and (b) it balances out the carrier. As a rule both operations are performed simultaneously, but this need not always be the case. If the carrier is applied to the balanced modulator in, say, the parallel mode, then the output must be connected in push-pull if carrier cancellation is to be obtained. Or conversely, if the input is in push-pull then the output must be in parallel.



Just as the balanced modulator may be used to mix the audio with the carrier, so may the modulator be used to mix a carrier (b.f.o.) with a signal to produce a difference or audio output. Only now we call it a demodulator. This process may be performed by most of the conventional balanced modulator systems, but that shown in Fig. 1, which was arrived at only after much deliberation and experimentation, has a number of important advantages. These may be listed as follows:

- No tapped i.f.s., coils or audio transformers are required.
- Because the carrier is applied in parallel and the signal in push-pull, it is not possible for b.f.o. voltage to be fed back into the i.f. amplifier to the detriment of the a.g.c. system. This latter point is important and will result in a false a.g.c. voltage being developed and applied to the front end of the receiver. Weak signals will consequently be lost.
- Only about 1 volt of b.f.o. voltage is required.

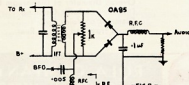
- Although the demodulator places a half wave load on the b.f.o., the opposite and equal action of the diodes holds the load constant. This reduces the tendency toward f.m. modulation of the b.f.o. by the signal. This last reason is important in transistor circuitry and was the cause of attention being paid to the balanced demodulator as a sideband detector.
- B.f.o. harmonics are negligible.
- Output is low impedance and of an order which makes matching between transistor circuits and the demodulator ideal.
- Output is low impedance and of an order which makes matching between transistor circuits and the demodulator ideal.
- Simplicity and economy of components.
- No fussy adjustments to make.
- High audio output. Sufficient to drive the usual receiver audio such as a 6AV6 to a 6AQ5 to overload providing a 1/6 step-up transformer is used. Without the transformer, output is still reasonable.

## CONSTRUCTION

The components may be mounted on a tag board and placed in a convenient part of the receiver chassis or cabinet. The b.f.o. and signal input leads must be shielded. R1 may be a 1,000 ohm potentiometer or two 470 ohm resistors. A potentiometer will allow the perfectionist to adjust for a null of the a.m. signal when the b.f.o. is off. If there is more than a "whisper" of output when the b.f.o. is off, the detector is functioning incorrectly. By moving the potentiometer to one side of its range, a.m. operation will take place in the normal manner although output will be down compared with the sideband condition.

The two diodes should be approximately matched for equal forward resistance. Their reverse resistance is of little consequence. Preferably choose diodes with a low forward resistance.

Almost any transistor i.f. transformer may be used at 1FT1. Ideally this should be about 25K to 1,000 ohms for transistors but for tubes or transistors this is not critical. The transformer may be directly connected to the last i.f. amplifier plate or collector, or capacitively coupled in the manner shown.

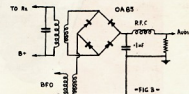


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## THE B.F.O.

The b.f.o. is an important part of any sideband detection system. A transistor b.f.o. should be followed by a buffer-amplifier stage. A tube should be a pentode with the oscillatory circuit between the cathode and screen. Output from the demodulator should be taken from the plate either through a step-down transistor i.f. transformer or through a capacitor. In the latter case an r.f. choke should be connected from the potentiometer moving arm to ground. B.f.o. voltage at the potentiometer should be approximately 1 volt or more. There is little point in using a very large b.f.o. voltage and, in fact, this may possibly produce troublesome harmonics. Surplus voltage should be dissipated in a series connected resistor. **Insufficient b.f.o. voltage will result in severe distortion of the signal.** With a two-stage i.f. in the receiver, output from the secondary of the transistor i.f. should not exceed about 0.2 volt. A higher output here will create distortion unless the b.f.o. voltage likewise is increased. A ratio of 10/1 on average signals with the maximum certainly not exceeding 5/1 will give the best all round results.

**Remember this:** when the signal voltage exceeds the b.f.o. voltage, you have a bad case of overmodulation taking place in your own receiver!



A QUAD DEMODULATOR HAS HIGHER OUTPUT

## THE QUAD DEMODULATOR

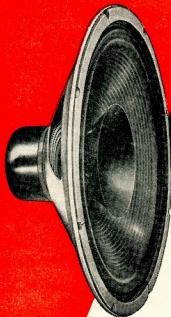
In Fig. 1 the two halves of the potentiometer make two legs of a bridge circuit of which the two diodes were the other two legs. By replacing the two resistors with two more diodes, we increase the output of the demodulator by about two. Advantage of this system is that the demodulator now imposes a full wave load upon the b.f.o. and as a consequence there is less likelihood of f.m. modulation by the signal. The increased output comes from the lower forward resistance of the diodes, this being appreciably lower than the value of resistors they replaced.

## IN GENERAL

It is indeed surprising that Amateurs have not made greater use of the balanced demodulators in s.s.b. telephony. The very simplicity of these non-power consuming devices make them particularly attractive. It is pointed out that a great number of similar and different configurations were bypassed. Perhaps one day . . . !

\* P.O. Box 51, Warkworth, New Zealand.

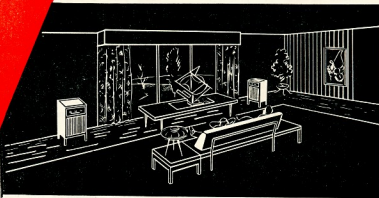
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<b>Voice Coil Impedance</b>	15 ohms at 400 cps
<b>Air Gap Flux Density</b>	12,800 Gauss
<b>Total Gap Flux</b>	87,000 Lines
<b>Principal Dimensions:</b>	
Overall Diameter of Diaphragm Housing	12 $\frac{1}{2}$ "
Diameter of Baffle Opening	10 $\frac{1}{2}$ "
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# S.W.R. Measurements with the TA-33 Jr. Triband Antenna\*

C. I. PATTERSON,† VK4YP

MANY Australian Amateurs have invested in one of these beams and many more are no doubt considering doing so.

The assembly instructions specify two different element lengths, one for c.w. and the other for phone operation, so the choice is made by the owner prior to hoisting the beam into its operating position.

The c.w. position midpoint frequencies are stated to be 14150, 21150, 28500 and the phone midpoint frequencies 14250,

21350, and 29000, with a reasonably low s.w.r. over the rest of each Amateur band.

The purpose of this article is to show in detail the reflected power actually measured over each of the three bands with a TA-33 Jr. assembled for both the c.w. and phone midpoint frequencies. It is hoped that a study of these results will help Amateurs to decide which of the alternative assembly instructions will be more suitable to them and to remove the nagging doubts most of us have as to whether or not we have made the correct decision when we are not in a position to prove it to be so.

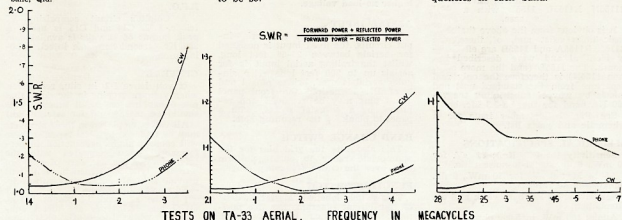
In actual fact the s.w.r. is not a matter of life and death as many of us believe, but nevertheless it is a perennial topic on the Ham bands and at least it is comforting to know that one's own co-ax line is operating according to generally accepted principles.

The measurements shown were taken at an antenna height of 45 feet. A cross check at 35 and 30 feet showed a tendency to increasing s.w.r. as the height was reduced.

A Micro Match Unit was adjusted to read 100 watts forward power in the RG-8U transmission line and the reflected power noted at various frequencies in each band.

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† Fig Tree Pocket Road, Fig Tree Pocket, Brisbane, Qld.



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We can also supply Crystals on any frequency, 1,600 to 10,000 Kc.  
at £2/10/0 each. Frequency tolerance 0.02%.

★

The above Crystals are all re-ground Disposal. They do not undergo the rigid tests of our new Crystals advertised elsewhere in this issue.

THIS OFFER ONLY HOLDS WHILE STOCKS LAST.

★

BRIGHT STAR RADIO

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The s.w.r. is easily determined by the formula:

S.W.R. =

F.S.M. Reading + Reflected Reading

F.S.M. Reading — Reflected Reading

(F.S.M.: Full Scale Meter)

From the accompanying graphs, the highest reflected power reading for the "c.w." assembly is 28 watts. From the formula we have:

$$S.W.R. = \frac{100 + 28}{100 - 28}$$

$$= 128 \div 72 = 1.8 \text{ to } 1.$$

Similarly, the highest reading with the "phone" assembly of 10 watts is equal to a s.w.r. of 1.2 to 1.

To summarise, it would appear that the "phone" assembly is better than the "c.w." assembly for all-band operation.

To generalise, experience has shown that the TA-33 does everything claimed by the manufacturers, including forward gain, front-to-back ratio, and s.w.r.

# The R1155 Receiver—Part Two

A. G. MULCAHY,\* VK2ACV

The R1155 was produced in several versions, a summary of which is given below:

Receiver Type No.	Basic Type	Modifications
R1155	—	Basic unit.
R1155A	R1155	R.f. interference filters added.
R1155B	R1155	Additional r.f. filtering added.
R1155C	R1155B	H.f./d.f. added for Coastal Command.
R1155D	R1155	Steel case.
R1155E	R1155A	" "
R1155F	R1155B	" "
R1155L	R1155B	1.5/3.3 Mc. range replaced the 75/200 Kc. range.
R1155M	R1155A	Units rejected for use in aircraft.
R1155N	R1155L	1155L with a steel case.

It is obvious from the above that four basic units exist and, of these, the R1155, R1155A and R1155B are effectively identical and were described last month. The R1155L (and the more common R1155N) is therefore the only real departure from the standard unit and this is by way of substituting the 75-200 Kc. band for the 1.5-3.3 Mc. band.

See Fig. 1 September issue for a schematic and parts list.

## ELECTRICAL SPECIFICATIONS

Sensitivity (at 210 Kc.): 12  $\mu$ V. for 50 mW., 6 db. signal-to-noise ratio.

At 16 Mc.: 6  $\mu$ V. for 50 mW., 6 db. signal-to-noise ratio.

Selectivity: 4.3 Kc. bandwidth at 6 db. attenuation.

Audio: 100 mW. in 5,000 ohms, maximum.

## CONVERSION

The average Amateur will have no use for the d.f. circuit (which is not described here) and a little careful snipping will produce a fair amount of spare chassis and panel space once these components have been removed. Remember that any valves removed will decrease the back bias developed across R1 and in the event that this causes distortion, R1 should be increased from 2,000 ohms to 2,500 ohms. (In some receivers R1 is 4,700 ohms.)

The following may be removed from the front panel (i.e. d.f. controls): meter balance, meter amplitude, meter deflection, aural sense, L-R switch, and the switch-speed switch.

The filter switch front panel control may be removed if desired as this switch attenuates all frequencies below 400 c.p.s. If you remove the switch, remove C10 and L29 and wire C96 permanently across C8 and C9.

## POWER SUPPLY

The requirements are: 217 volts at 110 mA. for the original set. When building the power supply, ensure that

**\* A detailed description of this receiver together with a series of valve substitutions which will replace the original valves. The a.v.c. characteristic is worthy of study for anyone requiring an effective a.v.c. control circuit.**

the negative lead is brought out as a separate terminal and is not connected to the power supply chassis. If this is not done, there will be no back bias developed across R1. Do not exceed 250 volts h.t., otherwise you will blow the condensers in the set. For this reason choke input is preferable to a condenser input filter which will have a higher no-load voltage.

## AERIAL INPUT

The receiver employs two aerial input circuits, the fixed input is designed for aerials between 25-65 feet long, whilst the trailing aerial input is for aerials up to 200 feet long. If a singular aerial is used, bridge pins 1 and 2 of P1. If desired the front panel Jones plug may be removed and replaced by a co-axial socket, with a panel to blank off the resulting hole.

## BAND CHANGE SWITCH

This also sets the grid bias for the appropriate range to ensure uniform gain over the entire frequency range.

## FUNCTION SWITCH

This switch, labelled "Master Switch" on the circuit diagram, has five positions: Omni, a.v.c., balance, visual, figure of eight.

Omni, or communication reception on the omni-directional aerial, enables manual volume control, the a.v.c. being out of circuit.

A.v.c.: receiver gain set by the a.v.c. action, audio volume set by V8 grid potentiometer. The last three positions are for d.f. work, hence will be omitted from this description. The manual gain control varies the grid bias on V3 to V6 by means of pot. R8, which may apply any potential between —3.6v. to —30v. to V4 and V5 grids, with a lesser bias applied to V3 and V4. The maximum bias appears across R1 and is —30v.

## A.V.C.

Automatic gain control of V3, V4, V5 and V6 is had in the a.v.c. position of the function switch. Under these conditions, R8 provides a.f. level control for V8. The a.v.c. delay is the potential across R4 (—3.6v.). On bands 1 and 2 this is reduced to —2.4v. by shunting R4 with R64. The voltage developed across R9, 10, 11 and 12 is divided for V3 and V6. The r.f. amplifier receives half the a.v.c. voltage, V4 and V5 full a.v.c., and V6 receives one-tenth of the a.v.c. voltage. The total a.v.c. delay is

13v. approx. achieved by holding V7 cathode positive through a voltage divider from h.t. plus. The delay is reduced on e.w.

The delay employed gives an a.v.c. characteristic which, for 80 db. signal variation, results in an output change of 8 db. The a.v.c. characteristic at 300 Kc., for a 30% modulated 400 c.p.s. signal, shows (with the filter out) a rise from —6 db. to +6 db. when the input rises from zero to 5  $\mu$ V. At 5  $\mu$ V. the knee of the curve occurs and an increase from 5  $\mu$ V. to 1.0 volt results in an increase of audio output of 8 db., i.e. from +6 db. to +14 db. (0 db. equals 10 milliwatts across 5,000 ohms). With the "filter" out, "Het. Osc." on, a 0 db. change in output occurs for a signal increase from 5 $\mu$ V. to 1.0 volt.

## B.F.O.

A Colpitt's circuit comprising V7 triode, L22, C14 and C15 is used. A peak output of 42 volts is available at 280 Kc., second harmonic injection being used.

## GENERAL

If you leave P2 in situ, remember, when you are groping in the dark, that pin 6 has h.t. on it all times. (This should be masked off for safety.—Ed.)

All valves employed in these receivers may be replaced by octal types. (These will cause a slight degradation in performance when compared with the original valves, which were of a "beam tetrode" type construction, but will provide a highly satisfactory substitute. —Ed.)

For the r.f. and i.f. stages, EF39, 6U7G and 6K7 types are direct substitutes, whilst the 6J8G, 6K8G and ECH35 are suitable for the converter.

**Remember to remove h.t. from all pin 1's on the valve sockets before using metallised tubes, otherwise the outer valve shell will be at h.t. plus.**

The b.f.o. and audio stages may be replaced with a 6B6G.

If you add a higher powered audio output stage, e.g. a 6V6G, return the grid and cathode resistors to the h.t. negative line, and not to earth. By so doing, this will avoid the rise in back bias which would result if the 6V6G current had to flow through R1.

★

## WORLD AMATEUR POPULATIONS

The United States of America has 201,002 Amateurs calling CQ, which are answered by Great Britain's 9,400, with Brazil (7,200) and Argentina (7,199) very close together but less than Canada (7,900). Germany (6,900) leads the field after the big five, and is then followed by Japan (6,400), Australia (4,600), New Zealand (3,800), South Africa (2,500), Sweden (2,200) and France with 2,100. Only five other countries have one thousand Amateurs, and one hundred and nineteen countries have less than one hundred Amateurs.

\* 45 Louie Street, Padstow, N.S.W.

## A 6146 on 2 Metres\*

THERE is a problem facing the newcomer to the 2 metre band, namely the obtaining of a suitable final. One is faced with finding a tube which is capable of running reasonable power and which will operate with a minimum of trouble.

My thoughts are centred on a valve type in the QQ series. While realising that these were ideal, I felt they were beyond my pocket. Hence it was decided to compromise in that I would build a transmitter in which a QQE06/40 could be substituted at some future date. Having a spare 6146 (which can be obtained at a reasonable price) and borrowing ideas from here and there, the following transmitter was constructed.

The exciter follows quite normal construction. It consists of a 12AU7, both triodes common as a third overtone oscillator. The slug-tuned coil is from a SCR522 and has 28 gauge wire wound to just cover the well.

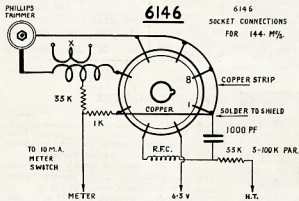
The 5763 valve is used as a doubler and drives a 6360 operating as a push-pull tripler to 144 Mc.

This appears to be an excellent valve in this application and is capable of driving a 6/40 to its full output. Care was taken to keep all leads very short. The doubler plate coil and capacitor, and the plate coil, etc., of the tripler, were mounted on opposite sides of the 6360 socket. Controls to the variable

on a 1 watt I.R.C. resistor. Careful attention was paid to wiring the socket which was a normal spring-mounted octal. A strip of copper was run round all the earth pins and soldered to a common point alongside the socket. The grid resistor and Philips' air trimmer were all soldered to this strip. The plate coil consists of 4 turns of heavy

may not be ideal, it would be easy to wind a few turns of fine wire on an I.R.C. resistor.

A 3-turn aerial link was used and coupled in till the plate current was about 100 mA. As this amplifier depends on grid drive for bias, care must be taken to ensure the exciter is operating. With plate and grid meters in-

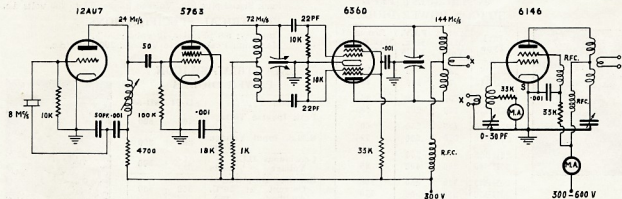


copper wire (10 gauge) soldered directly to the tuning capacitor. The other end is supported by the plate cap. (Make sure the metal shield of the 6146 is earthed with a copper strip.)

The r.f. choke is a miniature heater choke from an I.F.F. unit. While this

stalled, the writer considers that no trouble should be experienced.

[A suitable modulator design was described in August "A.R.," which, with a power supply, will provide an excellent 2 metre rig for the coming season.—Ed.] ●



capacitors can be brought out to the front panel if desired. Values of variable capacitors and coils are not given as any small butterfly condenser will do and the coil adjusted to resonate at the desired frequency with a g.d. meter.

The final, in my case a 6146, was mounted horizontally on a shield above was the exciter chassis. A tuned grid coil was used and a closely coupled two-turn link fed energy from the exciter. The grid current was set at 3 mA. by varying the coupling.

Neutralising was carried out with a coil, in the screen lead, consisting of 28 turns of 29 gauge copper wire wound

\* Written by an anonymous avid "A.R." Reader.

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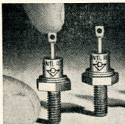
# The WARBURTON FRANKI Page

## DIFFUSED JUNCTION SILICON DIODES

6F SERIES							
P.I.V. (Volts)	6F5	6F10	6F15	6F20	6F30	6F40	6F50
R.M.S. Input (Volts)	50	100	150	200	300	400	500
12F SERIES							
P.I.V. (Volts)	12F5	12F10	12F15	12F20	12F30	12F40	12F50
R.M.S. Input (Volts)	50	100	150	200	300	400	500

## WORLD-FAMOUS

# INTERNATIONAL RECTIFIERS



## COMMERCIAL TYPE

### SILICON DIODES

		2E4		5E4	
		Cap. Load	Res. Load	Cap. Load	Res. Load
Peak Inverse Voltage	Volts	400	400	400	400
Maximum R.M.S. Input Voltage	Volts	140	280	140	280
Max. Rectified D.C. Output Current (at 70°C. ambient temp.)	mA.	200	300	350	500
Max. Surge Current (at 0.1 second)	Amps.	2	2	5	5
Max. D.C. Reverse Current at 100°C. (full cycle average over 10 sec.)	mA.	0.5	0.5	0.5	0.5
Max. D.C. Voltage Drop at 500 mA.	Volts	—	—	1.3	1.3
	200 mA.	1.3	1.3	—	—

## SEMICAP



## COMMERCIAL TYPE SILICON POWER DIODES

Int'l Type	R.M.S. Max. Volts	P.I.V. Max. Volts	Recom'd Max. R.M.S. Volts
25HB5	35	50	12
25HB10	70	100	24
25HB15	105	150	36
25HB20	140	200	48
25HB25	175	250	60
25HB30	210	300	72
25HB35	245	350	84
25HB40	280	400	96
25HB45	310	450	108
25HB50	350	500	120

## TYPICAL CHARACTERISTICS:

Capacitance Range: 3 to 30 pF.  
Frequency Range: 1 to 500 megacycles.  
Peak Signal plus Bias Voltage Range: 0.1 to 200 volts d.c.

## ELECTRICAL SPECIFICATIONS:

Capacity: 6.8 pF. at -10 volts  $\pm 20\%$ .  
Maximum Peak Inverse Voltage: 200 volts d.c.

## INDUSTRIAL SILICON POWER DIODES

Diode Types	SD-94	SD-95
Peak Inverse Voltage Volts	400	500
R.M.S. Input Voltage Volts	280	350
Continuous D.C. Voltage Volts	400	500
Rectified D.C. Output Current, at 50°C. Ambient mA.	550	550
Ditto, at 100°C. Ambient mA.	300	300
Max. Surge Current (1 cycle) Amps.	10	10
Max. Operating Frequency Kc.	50	50



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# A 500V. 300 mA. Supply using Silicon Rectifiers

S. T. CLARK,\* VK3ASC

AT the time of my original experiments I only had eight IN1763's available and had to limit the a.c. input to the bridge rectifier to 540 volts r.m.s. (the absolute maximum quoted by the manufacturers).

The overall efficiency worked out at 84%, a figure which is greatly in excess of that obtainable with selenium or thermionic rectifiers.

## CONSTRUCTION

The power supply can be built on a chassis measuring  $13\frac{1}{2}'' \times 4\frac{1}{2}''$  and at least two inches deep, or on the rear of a larger chassis which will accommodate the transmitter and modulator. [If the specified parts are used.—Ed.]

Mount the iron cored components as shown in Fig. 1, with the rectifiers on a tag strip of twenty-four lugs beneath CH1 and the electrolytics used for C2 and C3 on another tag strip beneath CH2. The bleeder can be mounted on the rear apron with the switches and pilot lights on the front. If a separate chassis is used a power connector will also be needed on the rear apron. This can be one of the several types available.

Of course, if you build the supply as part of a Table Topper, as is my intention, then the switches and pilots will be mounted on the front panel and the supply wired directly to the transmitter.

Be sure to observe the proper polarity of the rectifiers and electrolytics. The rectifiers are connected as shown diagrammatically in Fig. 1. They have a small symbol marked on them indicating the polarity.

In a power supply using a choke input filter, the unloaded d.c. voltage rises to the peak value of 1.42 times the r.m.s. input (i.e. 820 volts). By choosing the correct values for L1 and R1, this voltage can be controlled. In this case the d.c. output voltage is 570 volts with 30 mA. through the bleeder or 550 volts with 50 mA. The knee of the curve is quite sharp and the voltage drop is almost perfectly linear from the 50 mA. load point through to the "overload" check point of 400 mA., where the output voltage is still 460 volts.

The value of the bleeder resistor must be adjusted to take between 30 and 50 mA. unless it can be arranged that some of the low power stages which are not keyed or modulated are used as "bleeder". In this case then the resistors used for R1 could be very much higher in value than the 18,000 ohms for 30 mA., or 11,000 ohms for 50 mA. Four 100K ohm 2 watt resistors should be adequate for discharging the filter capacitors. The four resistors should be connected in series-parallel making a 100K ohm bleeder.

Taking the minimum tolerable bleeder current of 30 mA. as our "no load" condition, then the regulation figures are 6.6% for 70 mA. (100-30), 11.75% for 170 mA. (200-30), and 17.5% for 270 mA. (300-30). If the

idling current is adjusted to 50 mA. or more, then the regulation figures will be slightly improved because the internal resistance of the supply is a constant 30 ohms after passing the 50 mA. load point.

Regulation could be further improved by only using one choke in the filter for the high power stages, however, it may then be necessary to increase the capacity of C2 above the 20  $\mu$ F. used.

The condensers need only have a combined peak rating of 700 volts when the bleeder is adequate and suitable units of 50 and 100  $\mu$ F. are available. If the larger units are used, be very careful to use adequate insulation on the cans.

## POWER SWITCHING

Two double pole switches are shown, with one pole of S1 and S2 connected in parallel in the transformer primary, and the other poles connected in series in the h.t. output lead. This arrangement means that either switch may be used to switch the h.t. on and off and both switches must be off before the heater supply is disconnected.

The switches used should be robust with long leakage paths. I suggest Bulgin 6 amp. type or similar. Ordinary toggle switches are not recommended as they are too liable to fail and 5 amp. a.c. light switches are not designed for this service.

A suitable alternative would be to use a Bulgin type on the a.c. side and a "microswitch" on the h.t. This switching arrangement permits using the filament windings to supply the

tube heaters and 6-7 amps. can be drawn from these windings so long as the total h.t. drain is limited to 300 mA.

## PILOT LAMPS

These are 240v.  $\frac{1}{2}$  watt neons but a smaller size may be substituted if desired. The h.t. indicator (red) will need an additional dropping resistor R2, of about  $\frac{1}{2}$  megohm to limit the current to a safe value.

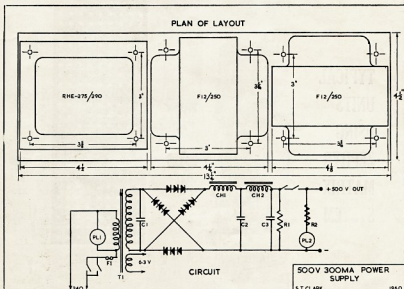
## PROTECTION

The circuit diagram of Fig. 1 shows only a 2 amp. fuse F1. The rectifier manufacturers warn against the likelihood of damage to silicon rectifiers from switching and keying transients. They state that these may be absorbed by capacitors, but I have been unable to obtain any recommended values as the only information I have suggests c.r.o. measurements to permit adjustment. C1 is included across the transformer secondary to help suppress transients. CH1 and 2 could be similarly treated also.

There appear to be a number of methods which are used in power supplies of this type, but there is no unanimity about the most effective methods and readers would do well to consider any technique which will protect a batch of silicon rectifiers from being damaged by transients.

## BIBLIOGRAPHY

1. Radiotron Designer's Handbook.
2. Radiotronics, June and September, 1959.
3. "Miniwatt" Germanium and Silicon Transistors and Diodes. Fifth Edition.
4. A.R.R.L. Handbook.
5. Radio Handbook.



T1—Power transformer. National RHE275/290.  
CH1—Filter choke. National F12/250.  
CH2—Filter choke. National F12/250.  
R1—Bleeder resistor. IRC FRW4M, 25K, 75w.  
R2—P12 dropper. IRC type BT  $\frac{1}{2}$  meg.,  $\frac{1}{2}$ w.  
PL1—240v.  $\frac{1}{2}$ w. neon.  
PL2—240v.  $\frac{1}{2}$ w. neon.

C1—0.02  $\mu$ F., mica or styroenol (1000v. a.c.).  
C2—Four 20  $\mu$ F. 800p.v. electrolytics.  
C3—As C2.  
Rectifiers—IN1763, OA210, or SD94A.  
Two 24-terminal tag strips and sundry small hardware items.

## JAMBOREE-ON-THE-AIR

The Scout Jamboree-on-the-Air will be held from 1000 hours on 22nd October, to 1000 hours (E.A.S.T.), on 24th October, 1960. The following Victorian stations are taking part:

VKs 3ADD Hamilton, 3ADV Skipton, 3WB Penshurst, 3II and 3AGD Dunkeld, 3AKR Westmere, 3AET Geelong, 3HG Coleraine, 3MC Coleraine, 3AKN Macarthur, 3ARJ Allansford, 3ADN Lismore, 3XN Hawksdale, 3JA Nullawarre, 3APS Casterton and 3XE Wools-thorpe.

The State Co-ordinator for this job is John 3AGD and his assistant is Lin 3ARL. John's address is "Wandobah," Dunkeld, telephone 134; and Lin's, 53 Alwyn St., Mitcham, telephone WU 3422.

Have you thought about a little display of your equipment for the visitors? Or to making up some simple little device, remembering perhaps that proximity sencer?

★

## PEDAL WIRELESS PIONEER PASSES ON

On 26th July there was a hush over the Centre as all transceivers and bases of the Flying Doctor network went off the air for two minutes in quiet tribute to Mr. M. B. (Morrie) Anderson (VK3AMA, ex-VK5MA) who died in the Heidelberg Hospital, Melbourne, on 22nd July.

Morrie Anderson, pioneer in his own right, was known up and down the

tracks from Burketown to Birdsville, from Innamincka to Broken Hill, from Camooweal to Millingimbi, and from Alice Springs to Coober Pedy. His friendly drawl from the Cloncurry and Alice Springs bases giving patient instruction to bush mothers struggling with a pedal set will never be forgotten.

"Morrie Anderson," said a cattleman, "symbolised the practical comradeship which has always been part of Flynn's team of workers. The whole inland is in mourning today for a great man."

His name is commemorated on a tablet in the Pioneers' Memorial Wall at the John Flynn Memorial Church at Alice Springs.

—*"A.I.M."* Frontier News, August 1960.

★

## DAFFY DEFINITIONS

A.M.—An old fashioned system of adding and subtracting intelligence (?) to and from a carrier which really isn't needed in the first place.

S.S.B.—An expensive method of getting all a.m. operators mad.

D.S.B.—A less expensive method of getting all a.m. and s.s.b. operators twice as mad.

C.W.—A still less expensive method of getting yourself mad.  
(Courtesy *Radio Review*, Radio Amateurs of Greater Syracuse.)

Psycho schematic; a radio amateur following P.M.G. trunk line circuits.

## LONG DISTANCE COMMUNICATION

The American space probe, "Pioneer V", designed to orbit between the sun and earth, a distance of fifty million miles, relies upon solar cells to power its transmitters.

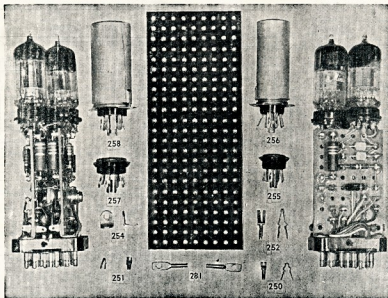
Jodrell Bank (England's giant radio astronomy centre) was in control, being one of the few centres in the world capable of receiving messages from such a distance. Frequencies of 273 Mc. and approximately 960 Mc. being used for control. It would appear that "Pioneer V" is now inoperative as radio messages are no longer being received from it. However, the space vehicle is itself still in orbit.



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## TRANSISTORISED CONVERTER FOR MOBILE WORK—THE EASY WAY

(Continued from Page 9)

use of dry cells is that it is unnecessary to make any power supply connections, either to the car receiver or to the car battery. This saves considerable time during installation and makes the unit readily adaptable to portable operation should the occasion arise.

The chassis used by the author was made from brass from an old AR7 coil box, which with very little effort can be made to look neat and tidy. Figs. 2 and 3 give an idea of the layout. No particular layout is required. No instability was experienced as a result of lead and component placement. Keep all leads as short as possible and mount all the parts securely to the chassis. This will prevent the leads from breaking as a result of the vibration which occurs in mobile operation.

Because of the small current and voltage requirements of the converter, it is not necessary to use standard hook-up wire in the circuit. No. 30 insulated wire is entirely adequate and results in a much more compact and neat-appearing finished product.

Only two external connections to the converter are necessary. A co-ax lead from the antenna must go to the input of the unit and an output co-ax connection to the input of the car radio is required.

When the unit is wired and ready for testing it will first be necessary to make certain that the oscillator is functioning. An easy method of determining this is to turn the converter on and listen to the home receiver for the signal from the oscillator. Tune the receiver to the oscillator crystal frequency and adjust the slug in L3 until the signal is heard. The oscillator will not oscillate until the collector tank C2-L3 is resonant. If the converter was built for operation on 20, 15 or 10 metres, it will be necessary to tune the home receiver to the third

harmonic of the crystal frequency while making the above adjustments.

After the oscillator is known to be operating properly, install the unit in the car with the car radio tuned to the intermediate frequency of the converter and the converter turned on, adjust the slug in L3 for maximum background noise as heard on the car receiver. Next adjust the slug in L1 for maximum noise or select a weak signal and peak it up for maximum gain. After this adjustment is completed set the car radio for the centre of the i.f. frequency band to be used with the converter, adjust the slug in L5 for maximum gain. If only one segment of a particular band is going to be used additional gain can be realised by peaking the coils for that portion of the band. Example, peak the converter for 3,800 to 4,000 Kc. rather than 3,500 to 4,000 Kc. If 75 metre operation is contemplated and you are interested primarily in the phone band.

The converter built by the author has been in constant service for two years and the four penlite cells have only been replaced once in that time. Under normal circumstances they should last their normal shelf life. The measured current drain of the converter was 2.3 mA.

The sensitivity of the unit on the lower frequencies is comparable with that of a three-tube converter which was originally used in the writer's mobile installation. It does not compare as favourably with a vacuum-tube converter when used on 15 or 10 metres because no r.f. amplifier stage is incorporated. However, it proves to be adequate and an S6 signal or better is comfortable copy at these frequencies.

Changing to a transistorised converter was one of the most gratifying experiments I have undertaken and was well worth the effort. I am sure you will find the results equally satisfactory.

### REFERENCES

Philips Transistor Circuitry, 1959.  
"QST," September 1958.  
Philips Transistor Circuitry, 1959.

## FEEDBACK

There are some who regrettably consider that s.w.l.'s are a pest and should not be encouraged. This is an unfair attitude because many Amateurs are s.w.l.'s and it cannot be claimed that the same person is different when he calls CQ to when he signs an s.w.l. card (Look through the Call Book and see how many Amateurs are s.w.l.'s—you will also be surprised.) Today our aim should be an active W.I.A. and for this to continue we must have new members, and what better source of potential Amateurs than the current s.w.l. Everyone must commence in a hobby and it is very important we encourage people to join our ranks. Perhaps you have forgotten how you received a start in Amateur Radio, but did your tutor consider you a pest, because if he did, then would you have continued with your interest and become an Amateur? It is deplorable for any group to become split in its opinion regarding the desirability of having certain classes of interest within its ranks. Let every member welcome newcomers to our hobby, and endeavour to have them obtain their ticket, then we can be assured of the continuation of the W.I.A.

★

Hope all this moon-bounce publicity is not moon-shine.

★

If Amateurs decided to assist the Country Fire Authority in every way possible they would be rendering a valuable community service, and by so doing may perhaps overcome the prejudice in some quarters regarding the desirability of a W.I.C.E.N. network. It is admitted that we already do help the C.F.A., but are we doing all we can? I know of one group who have realised that their local community "service" (?) is incapable of being used in a real emergency. It would be useless for the local authority to find out in an emergency that his stand-by network could not be used, and these Amateurs are to be congratulated in going ahead without waiting for officialdom to learn that their thoughts are not worth a 69 Gc/s. dipole. This is something to think about—could the Amateur Service obtain much needed emergency network practice, help an essential community service, and at the same time prove (if proof was needed) that Amateurs are professionals, all by increasing their C.F.A. activity?

★

Public Relations — Populated Bands  
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I wonder if the readers of "A.R." would reply to a questionnaire and state what they prefer to read in the magazine. This could help the Publications Committee (and make more work for the Editor.—Ed.), but perhaps they had not thought of it. Why not write in and say what you prefer. It could save me having to write this column each month.

73.  
CASEY.

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# Rules of the Australian DX Century Club Award

1. The Australian DX Century Club Award is open to any Australian Amateur who has established two-way contact with one hundred or more countries in the world and complies with the following Rules.

2. All contacts must have been made since the return of licenses after the 1939-45 War.

3. The official Countries List, as published annually and amended from time to time in the Federal Notes of "Amateur Radio" shall be used for the purpose of determining "countries".

4. All contacts shall be made with other Amateur stations operating in the authorised Amateur bands, or with stations licensed to contact Amateur stations.

5. Contacts made with ship or aircraft stations will not be allowed, but mobile stations may be claimed provided the location at the time of contact is clearly shown on the confirmation.

6. Credit may only be claimed for stations using regular government assigned calls for the country concerned.

7. Stations of a portable nature which are using their own call sign followed by the prefix of the country in which they are operating may be credited under Rule 6 above, provided that the confirmation submitted indicates the particulars of such operation and the other requirements are in accordance with these Rules.

8. Each confirmation submitted must show the date of contact, type of emission, the report, the band and the location of the station.

9. Confirmations must be submitted exactly as received from the station contacted and altered or forged confirmations will be grounds for disqualification.

10. Out-of-band operation used to contact a station will result in disqualification and be retrospective in the case of members.

11. All stations must be contacted from the same Australian call area and by the same licensee, although if the call sign is subsequently changed, contacts will be allowed if still within original call area and by the original licensee.

12. Confirmations submitted which show both phone and c.w. reports may be accepted for both sections if the date of each contact is shown and emission is indicated.

13. Should a country be deleted from the official countries list at any time, members and intending applicants will be credited with such country if the date of contact is before the date of such deletion.

14. Certificates will be issued for "All Phone", "All C.w." and "Open" contacts with a hundred countries and stickers will be subsequently issued for each additional twenty countries confirmed over the one hundred.

15. Successful applicants will be listed monthly in "Amateur Radio". Subsequent to the first application,

members must submit additional confirmations of not less than five at any one time, for additional credit.

16. Applications for membership shall be addressed to the Awards Manager, G.P.O. Box 2611W, Melbourne, and accompanied by sufficient postage for return of confirmations to the applicant, registration being included if desired. Confirmations must also be accompanied by a list of claimed countries and stations, showing relevant details or explanations where necessary.

17. The decision of the Awards Manager in the interpretation and application of these Rules shall be final and binding.

18. Notwithstanding anything to the contrary in these Rules, Federal Council of the Wireless Institute of Australia reserves the right to vary or alter them when necessary.

## D.X.C.C. AWARDS AS AT 1/9/60

### PHONE

Call	Cer. No.	C'tries	Call	Cer. No.	C'tries
VK6RU	2	247	VK3TE	37	115
VK6MK	43	241	VK4JP	3	114
VK5AB	45	232	VK7LZ	36	111
VK4FJ	21	219	VK5HW	38	111
VK3WL	14	211	VK5MS	24	109
VK3ATN	26	204	VK4CB	23	109
VK6KW	4	199	VK3WM	29	109
VK4HR	12	192	VK4EL	44	108
VK3BZ	3	176	VK7RX	32	107
VK4RW	23	164	VK4NC	35	105
VK3EE	10	163	VK9AU	40	104
VK9DB	31	161	VK3HO	25	103
VK4WF	16	160	VK2VW	46	103
VK3JD	1	155	VK2ADT	13	102
VK4KS	9	152	VK2AHA	15	102
VK3LN	11	141	VK6PJ	19	101
VK3JE	7	140	VK5CE	34	101
VK4DO	20	139	VK3TG	48	101
VK6DD	6	126	VK3IG	5	100
VK5KN	42	126	VK3GG	18	100
VK4RT	22	124	VK5LC	27	100
VK4WJ	17	122	VK3AUP	30	100
VK3ACN	39	120	VK3VQ	33	100
VK2AHH	41	120	VK2AJO	47	100

### C.W.

Call	Cer. No.	C'tries	Call	Cer. No.	C'tries
VK3KB	10	280	VK3XO	43	144
VK3CX	26	267	VK5JT	54	144
VK4FJ	29	262	VK3VW	4	143
VK3NC	19	236	VK2QL	5	142
VK3FH	15	226	VK4SD	52	140
VK3BZ	6	222	VK3XK	30	138
VK4HR	8	218	VK3DQ	61	136
VK3XU	48	213	VK3ZO	65	136
VK6RU	18	209	VK5FN	31	134
VK3YL	39	203	VK3JJ	25	131
VK5BY	45	202	VK2XU	64	129
VK2EO	2	191	VK3RJ	42	128
VK5RX	23	190	VK3RP	56	126
VK4DO	20	176	VK4RF	11	125
VK4EL	9	175	VK3HT	37	124
VK5BO	33	171	VK3YD	27	123
VK3CN	1	163	VK3EK	3	122
VK7LZ	17	162	VK3UM	12	120
VK4RW	47	155	VK3PL	38	117
VK9XK	41	154	VK2OY	44	115
VK2ZW	16	151	VK7LJ	24	114
VK6SA	28	150	VK6WD	40	114
VK3JE	21	148	VK4DA	7	113
VK4QL	36	146	VK2OI	49	108

### C.W. (Continued)

Call	Cer. No.	C'tries	Call	Cer. No.	C'tries
VK5KU	63	108	VK4SS	53	103
VK4RC	13	107	VK3PG	46	102
VK2AHH	62	107	VK2AIR	60	102
VK2AEZ	35	106	VK2OA	32	101
VK7CH	55	105	VK3APA	14	101
VK3ARV	59	105	VK3ZA	57	101
VK3AHH	51	104	VK2OV	58	101
VK4HR	66	104	VK7RK	22	100
VK5BS	67	104	VK3AHM	50	100
VK2YC	34	103			

### OPEN

Call	Cer. No.	C'tries	Call	Cer. No.	C'tries
VK2ACX	6	282	VK3VQ	46	127
VK4FJ	32	265	VK2AHM	20	125
VK6RU	8	263	VK3PG	47	124
VK6MK	74	245	VK3YS	57	119
VK3NC	77	238	VK3AO	76	118
VK4HR	7	233	VK5LC	55	118
VK3BZ	4	231	VK4CC	62	117
VK3HG	3	225	VK3HL	75	117
VK3WL	45	225	VK2ASW	53	116
VK3XU	61	221	VK5NO	78	116
VK6KW	13	214	VK6PJ	44	115
VK3JE	12	210	VK3JA	43	114
VK3ATN	69	210	VK2ADT	14	113
VK7LZ	23	201	VK7RX	60	112
VK4DO	15	196	VK3HO	38	111
VK2NS	16	195	VK3MM	49	111
VK4RW	52	191	VK4RC	21	110
VK9DB	59	182	VK3ZB	34	110
VK4EL	10	175	VK2ZZ	25	108
VK2DI	2	170	VK3KR	56	107
VK3XK	1	167	VK3AHH	64	107
VK4KS	24	167	VK3ARV	68	107
VK4WF	40	165	VK2YL	11	106
VK9XK	54	156	VK3AWN	36	105
VK3DQ	71	152	VK6WT	58	105
VK2AHH	73	151	VK2VN	18	104
VK5JT	63	150	VK4UL	27	104
VK9GW	48	148	VK6PW	50	104
VK2XU	79	146	VK3ATR	72	104
VK3LN	29	144	VK2HZ	17	103
VK5FL	26	143	VK7KB	30	103
VK3HT	41	141	VK2TI	37	103
VK3MC	5	139	VK3ZA	65	103
VK3OP	19	137	VK7RK	31	102
VK6DX	42	137	VK4TY	35	102
VK6DD	22	136	VK2AFA	70	102
VK2ADE	28	133	VK5HT	51	101
VK3JJ	33	131	VK2TG	39	100
VK4BG	66	130	VK1EG	67	100
VK2AHA	9	128			

The political framework of the world is constantly subject to change and in this regard 1960 will always be remembered. A brief examination of the Countries List in use a few years ago reveals how unrealistic it would appear if still in use today. It has been suggested that political considerations be removed from our thinking and instead we settle for some form of geometrical division of the earth's surface into zones. "W.A.Z." sponsored by "CQ" magazine provides 40 Zones following country boundaries in part, otherwise across stretches of ocean and not conforming to any particular size or pattern. There is no particular merit in any such sub-division as far as countries are concerned. Another proposal has been to divide the map draught-board fashion but DX'ers (and

Award Managers) would be faced with the impracticable task of plotting DX contacts.

The above infers that listings are influenced by the form of Government of the place concerned. Irrespective of its size, location or population, consideration is given to the listing of any place from which there is or has been Amateur activity and geography is, therefore, the second criterion.

Briefly, the main considerations for separate listing as a "country" are:

1. Political-administrative independence, and/or
2. Geographical separation (225 miles by water, excepting natural island groupings or 75 miles by land).

The list has been compiled on these lines, for the most part; however, the

main requirement is that we have a common list, interesting and informative in itself, for all comers to follow.

A new and attractive Australian DXCC Certificate is being prepared by F.E. and all DX'ers are urged to work for and obtain this Award plus stickers for every additional 20 confirmations credited.

Details of countries which have been deleted from the current list from time to time, for which credit may still be obtained vide Rule 13, and all other relevant information will be embodied in future W.I.A. Countries Lists. The first complete list will be published in January, 1961, issue of "A.R."

A. KISSICK, VK3KB,  
Awards Manager,  
1 Macfarland St., Brunswick, Vic.

## CONTESTS

### VK/ZL DX CONTEST

The Federal Contest Committee of the Wireless Institute of Australia appeals to all VK Amateurs to make an extra BIG effort to enter enthusiastically in the VK/ZL DX Contest during the first two week-ends in October.

Among the logs received on last year's Contest were a number of complaints on the conspicuous absence of VK stations to be heard. One remarked that he didn't hear any VK1 stations, and promised a real pile-up of answers to any who called.

### "CQ" WORLD WIDE DX CONTEST

The phone section of this Contest commences at 0200GMT on October 29 and runs to 0200 GMT on October 31.

The c.w. section starts at 0200 GMT on November 26 and concludes at 0200 GMT on November 28.

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Throat Microphones ..... 5/6  
A.W.A. 153 type Transmitters, 3 units, complete, £50 cash or terms.  
P.M.G. Type Relays, 300 ohms to 10,000 ohms, brand new, 10/- ea.  
Micro Switches ..... 5/6  
500 mfd. 40v. Block Condensers ..... 2/6  
Power Transformers, 400v. c.t. 400v., 250 mA. .... 50/-  
Filament Transformers, 6.3v., 5v., and 4v. .... 40/-  
Microphones ..... 10/-  
Electric Motors, 230v.  $\frac{1}{2}$  h.p. .... 75/-  
24v. Electric Motors ..... 10/-

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# AMATEUR RADIO EXHIBITION AT GEELONG, VIC.

**A**N exhibition of Amateur Radio equipment was held by the Geelong Amateur Radio Club on 9th and 10th September, 1960. The purpose of this exhibition was to acquaint the public with all phases of Amateur Radio as practiced by licensed Amateurs and S.w.I.'s in Geelong, and to give the more technically minded the opportunity to meet together to discuss their mutual interests.

The Exhibition was officially opened on Friday evening at 8 p.m. by the Minister for Shipping and Transport, Mr. Hubert Opperman, M.H.R. Following the opening, Mr. Opperman presented the G.A.R.C. Perpetual Trophy to the winner of the competition for the best

hews, VK3SY; A. Bell, VK3ABE, to whom the Club extends its thanks for the conscientious manner in which this rather difficult task was carried out.

The range of home-constructed equipment on display, the greater part of which was not in the competition, was very comprehensive and included such items as an a.t.v. transmitter, a flying spot scanner and a 1 to 1 converter (1 metre to channel 1); a 24 inch t.v. receiver and a 5 inch receiver built from "disposals" parts.

The a.t.v. equipment operated on 288 Mc. For 1,296 Mc. operation, there was a complete station including the large parabolic antenna. For the lower bands, a 60 watt transmitter, using a Geloso

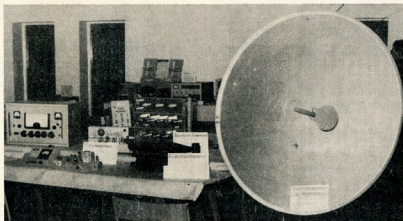
v.f.o. and 6146 p.a.; also a s.s.b. generator. Test equipment was represented by the inevitable but very useful g.d.o., c.r.o. monitors, audio oscillators, etc. The mobile display included crystal controlled transmitters, modified Command receivers, a field strength meter, d.f. loops and whip antennae.

A number of commercial firms were invited to exhibit Amateur equipment currently available, and of interest were various Heathkit items from Warburton Franki, a s.s.b. generator from the Amateur Radio Service, Albury; A. & R. Transformers and Zephyr Microphones from Mr. A. J. Forster, of Brownbill's Amplifier Service; and an experimental projection t.v. receiver, with an imported German model alongside for comparison, from Mr. Davies, Geelong.

"On the air" demonstrations of Amateur Stations operating were given by VK3ABK and VK3ZAV on 144 Mc.; VK3ABT on 3.5 and 7 Mc.; with VK3ANG and VK3ATL working some real DX on the international bands.

The South Western Zone W.I.C.E.N. group was active and stations which provided loud clear signals for the benefit of an interested group of listeners were VK31C/Mobile, Geelong; VK3AKN, Broadwater; VK3XE, Hexham; VK3ARJ, Wangoom; VK3AGD, Dunkeld; VK3AMS, Drysdale; VK3ADN, Lismore. (Thanks chaps for your co-operation after an unavoidably long delay in commencing the net.)

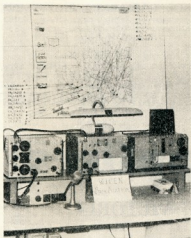
Club members appreciated the interest shown in the Exhibition by the Wireless Institute of Australia, which was represented on the Federal level by Bob Boase, VK3NI, and for VK3 Division by Michael Owen, VK3ZEO (State Secretary) and Keith Roget, VK3YQ (State Treasurer).



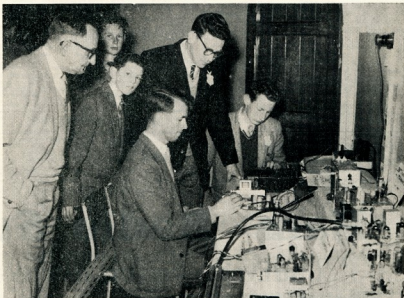
Some of the home-constructed gear at the Exhibition. On the right is a parabolic antenna for the 1296 Mc. equipment (mounted behind the antenna).

piece of home-constructed equipment (VK3ABT).

This competition, which is to become a regular feature of the Club, has been inaugurated to encourage members to build their own gear. The judges were Messrs. E. Kossek, VK3AKE; J. Mat-



The W.I.C.E.N. Base Station of the South Western Zone, Victorian Division, W.I.A.



Dick Heighway, VK3ABK, demonstrating a piece of v.h.f. equipment to Club President, Harry Michael (black coat) and Club member Ron Cook (sitting down on right of photo), with interested spectators on the left of the photograph.

# DISPOSAL BARGAINS

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FT 2075	DC 2336.4	DC 2595
2085	DC 2338	DC 2665
	DC 2338	
AWA3030	DC 3332.5	DC 3488.5
DC 3055	FT 3340	AWA3545
FT 3184	L 3432.5	FT 3500
FT 3195	DC 3440	DC 3536
DC 3266.25	AWA3450	L 3600
DC 3287.5	L 3460.5	FT 3650
DC 3313.5	L 3467.5	FT 3840
L 3320		FT 3885
FT 4025	FT 4445	L 4742.5
FT 4035	FT 4490	L 4750
FT 4080	DC 4495	FT 4765
L 4096	FT 4495	FT 4780
FT 4124	FT 4520	FT 4815
FT 4240	FT 4540	FT 4840
FT 4255	DC 4549.44	FT 4852.5
FT 4290	FT 4550	L 4870
L 4285	FT 4620	FT 4880
FT 4295	DC 4660	FT 4895
FT 4360	FT 4672.76	FT 4930
L 4396.7	FT 4676.11	FT 4950
FT 4397.5	FT 4735	FT 4965
FT 4397.5		FT 4995
AWA5161.6	FT 5437.5	FT 5744
DC 5170	FT 5480	DC 5770
FT 5180	DC 5515	FT 5773
FT 5205	DC 5530	FT 5775
DC 5210	FT 5535	FT 5780
FT 5245	L 5551.5	FT 5782.5
AWA5280	FT 5552.5	DC 5810
DC 5285	DC 5590	FT 5815
FT 5295	FT 5635	DC 5840
FT 5327.5	FT 5660	FT 5850
FT 5360	FT 5665	FT 5855
FT 5365	DC 5700	L 5897.5
FT 5397	FT 5706	FT 5910
DC 5410	DC 5710	L 5910
FT 5410	DC 5710	FT 5920
FT 5435	FT 5725	DC 5950
	FT 5740	

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385 volts aside, 100 mA., 6.3v. at 3 a.,  
5v. at 3a. Brand new 45/-.  
410 volts aside, 80 mA., 12.8v. at 1.25a.,  
5v. at 2a. 40/-.

Type Kc.	Type Kc.	Type Kc.
DC 6032	DC 6350	LP 6547
LP 6040	FT 6350	DC 6550
FT 6106.60	LP 6350	DC 6561
LP 6110	FT 6373.33	DC 6572
FT 6125	FT 6375	DC 6572
LP 6130	FT 6400.000	LP 6583
FT 6173.33	FT 6406.607	LP 6640
FT 6175	DC 6420	DC 6650
LP 6187	DC 6423	FT 6650
LP 6210	FT 6440	DC 6700
FT 6225	DC 6450	LP 6700
FT 6235	DC 6450	DC 6750
LP 6235	LP 6450	DC 6783
DC 6240	LP 6470	FT 6900
DC 6243	FT 6473.333	LP 6910
LP 6243	LP 6480	LP 6910
LP 6317	FT 6506.607	LP 6940
FT 6333.3	LP 6522	FT 6960
	LP 6525	
LP 7010	DC 7270	FT 7750
LP 7060	LP 7270	DC 7810
DC 7062	FT 7275	DC 7890
FT 7077	FT 7375	LP 7890
DC 7120	FT 7425	DC 7920
LP 7120	LP 7450	DC 7925
LP 7130	FT 7611	DC 7925
DC 7200	DC 7660	DC 7930
FT 7200	DC 7700	LP 7930
LP 7250		DC 7997
LP 8060	DC 8176	FT 8353
DC 8126	DC 8182	DC 8392
LP 8155	LP 8195	DC 8440
DC 8161	FT 8270	DC 8630
LP 8171	DC 8284	DC 8751
	DC 8350	

### OTHER FREQUENCY XTALS

DC Type—2898.75 Kc.	£2/10/0
FT Type—3.5 Mc. min.	£2/10/0
FT Type—4440 Kc.	£2/10/0
FT Type—4095 Kc.	£2/10/0
DC Type—5 Mc.	£2
FT Type—5.5 Mc.	£2/10/0
FT Type—6 Mc.	£2

### AT5 TRANSMITTERS

As new, with valves and dust covers.  
Bargain, £7/10/0.

### USE 1625s IN CLASS B

Valve type 1625, 5/- ea.; or 5 for £1.  
Ideal for use in Class B Zero Bias Modulators. See article August "A.R." p. 3.

### VALVE SPECIALS

DL75 sub. min. power output pentode,  
primarily intended for hearing aid.  
Fil. volts 1.25 at 25 mA., h.t. volts  
90 volts ..... 3 for £1, 7/6 each.  
EC79/6K4 u.h.f. osc. triode, 8-pin min.  
..... 3 for £1, 7/6 each.  
EF70 sharp cut-off r.f. pentode, 8-pin  
min. .... 3 for £1, 7/6 each.  
EF72 r.f. pentode, 8-pin min.  
..... 3 for £1, 7/6 each.  
EF73 remote cut-off pentode, 8-pin  
min. .... 3 for £1, 7/6 each.  
EC91/6AQ4 g.g. triode, freq. limit 250  
Mc., 9-pin min. .... 10/- each.  
832A valves, new in carton. Few only  
available ..... 19/6 each.

### VALVE SOCKETS

Octal valve sockets ..... 6 1/6 each.  
English 8-pin min. sockets ..... 1/6 each.  
Loctal valve sockets ..... 1/- each.  
Acorn valve sockets, ceramic ..... 3/- each.  
Min. 7-pin valve sockets, 9d. each, or  
8/- a dozen.  
Ceramic 5-pin 807 valve sockets, 3/6  
EF50 valve sockets ..... 3/6

### PLUGS, CABLES, DRIVES

AT5/AR8 Cables, 10 ft. long ..... 10/-  
Command Receiver Flexible Drives, 12  
ft. long ..... 10/-  
Octal Plugs, with dust cover ..... 1/- each.

### FUSES AND FUSE HOLDERS

Twin Cartridge Auto Fuse Holders, en-  
closed, bakelite case ..... 2/6 each  
Fuses, Auto, all types ..... 5 for 2/-  
Fuse Holders, round type ..... 3/6 each

### VARIABLE CONDENSERS

120 pF. ceramic, 1/4 inch shaft, 10/-  
Three-gang (R1155 type), ceramic in-  
sulation ..... 17/6  
Four-gang, 150 pF. per section, ceramic  
insulation ..... 15/-  
Two-gang, broadcast, ceramic ..... 12/6  
Single-gang, 0.0005, ceramic ..... 7/6

### MIN. VARIABLE CONDENSERS

Screwdriver adjustment, silver plated.  
Sizes available: 25, 55, and 80 pF.  
7/6 each or Three for £1.

### SWITCHES

Switches, d.p.s.t. toggle, SCR536 type,  
5/- each, or 5 for 20/-  
Switches, s.p.s.t. toggle, new ..... 3/6

### STEP-DOWN TRANSFORMERS

230 volt to 110 volt, 1kv.  
£8/10/0

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# CORRESPONDENCE

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

## AMATEUR T.V.

Editor "A.R.," Dear Sir,  
I found it rather hard to get at the real point of your letter from VK2AAW/T, and I was at first inclined to write to Dennis personally, feeling that his equally spirited letter was due mainly to a misunderstanding of my remarks. However, a public hearing has been opened and the accused subpoena'd, leaving me no choice.

Although my existence has, until now, been unknown to our VK2 friend, word of his activities and those of a few others has filtered through to me, and complete details are lacking. I can assure him that I have read all earlier issues of "A.R." since 1948 and any mention of a.t.v. has been noted. As I am in almost daily contact with Bill VK3BU/T, approximately 2 miles distant in the same city, I feel that this can be regarded as being in contact with Dennis and his associates.

I might add that I have had an active interest in the possibilities of a.t.v. since 1950, when I was connected with the then unborn Australian television industry. For several years now I have been preparing for the day when consistent a.t.v. communication becomes possible. I realise the present difficulty of making one-to-one contact when distance is a factor, and any implication that I was not in favour of closed circuit activities could hardly be justified, since this has been my own method of approach. This is where "A.R." comes in as a communication channel making it possible to keep in touch with activity, both local and interstate.

A proposed constructional article on a flying spot scanner, using electrostatic deflection and focus, is being considered here, and several others who have built magnetically operated systems have been approached to do likewise. My letter in July "A.R." has brought forth correspondence asking for this very information.

The question of standards is one which is partly answered by the P.M.S. Department, and any practical standard could be planned for future adoption to possible expansion of activity. In this regard I have followed the lead of the P.M.S. as indicated in the July letter, and I see no argument with this.

I was pleased to see printed in September "A.R." a letter from Geoff VK3AUX/T describing the possibilities of a.t.v. in the example will be followed by a large percentage of the 136 suffix T calls listed in the latest Call Book.

—Richard J. Heighway, VK3ABK/T.

## CARTOONS

Editor "A.R.," Dear Sir,  
Ref. the item in "A.R." for Sept. on p.22 at bottom right hand corner headed "Cartoons," which (that includes the rest of the family) are all for a page of the best. I hope those of Jeveral on the DX page of "QST" will be included.

We also enjoy the ones by Lindsay VK3ZEW. The trade mark being the "Moggy" and the remains of a fish. It is surprising the places these two turn up (mostly up on a beam). The one in the July issue could make a good advert, for Minties, wonder what VK3XF has to say.

Glad to see a Sideband column, one of these days I will be playing with it. If I get a full ticket, I will use s.b. exclusively on h.f. band and try to on v.h.f. Keep up the good work on "A.R."

—John M. Withers, VK3ZCO.

## S METER CIRCUIT

Editor "A.R.," Dear Sir,  
Congratulations on the excellent S meter circuit published last month. It's very fine having a meter that swings full scale with a strong signal, instead of half-heartedly dropping.

One comment is that a pot. is unnecessary as cathode resistor (R4); fitting one on a resistor could provide better linearity. If no value is found, adjustment is not needed, as the meter cannot move too far across—that's one of the beauties of the circuit!

I spent about three hours trying to make a 0-10 mA. meter work. Substituting an 0-1 mA. meter made everything right in about three minutes. The meter was used as a current network is simply adapted to accommodate whatever meter may be available; don't you believe it.

If the meter is drawing 10 mls., then the tube needs to draw a lot more to deflect the meter to 9; then a.v.c. has to be cut off. If the 10 mA. flows into the meter, some a.v.c. If you must use a 10 mA. meter, run the B plus of an I.F. amp. tube through it, and the deflection indication will be seen when a.v.c. biases the tube.

Another objection to burning 10 mls. through an S meter is the heat that must appear somewhere, over a parallel connection, prevented in a few minutes.

—Rev. Bro. D. L. Kinsella, VK2AKX.

## THE ABOLITION OF C.W.

Editor "A.R.," Dear Sir,  
Congratulations on your long-awaited feature on Sideband and full marks to Bud Pounsett for getting on with the job in such a practical down-to-earth and friendly manner. This induces more to join the sideband ranks it will have achieved its purpose and I'm quite convinced this will be done.

As I see it (in a brief six months of exclusive sideband operation) two major problems face us in getting more to the sideband ranks. The first is the feeling that sideband is complicated. For the technically minded simple and effective transmitters can be built and for the non-technical (and I must admit, falling in) the necessary commercial equipment readily obtainable now that import restrictions have been lifted.

The second problem—and this is a real one—is to get more frequencies into the operation. 14 Mc. seems to be by far the most popular, yet all are concentrated in the top 5% of the band. There's much W-fan QRM. S.W. seems to have more and more of lower frequencies as raised so well by Pounsett in July issue of "A.R."

Many theories have been submitted for band reallocation. May I submit this one: 14,000-14,040 c.w.; 14,040-14,140 a.m. phone; 14,140-14,200 s.s.b.

C.W. as a form of communication is out-moded and no longer necessary (I see no useful reason whatsoever for its inclusion in the A.O.C.E. examination) but any suggestion gives these 40 Kc. for the time being. After a limited period, say six months, if the majority agree, we could hand this over to a.m., leaving the four remaining Kc. for the 100 Kc. and s.s.b. the next 100 Kc., i.e. 14,000-14,100 a.m.; 14,100-14,200 s.s.b.

Here's to the solution of our problems, at least on the DX bands and the ridding of our ranks of these strange chaps who sacrifice all (including in most cases their families) for that one country, the majority of which are uninhabited.

—Roth Jones, VK3BG.

## DIATHERMY INTERFERENCE

Editor "A.R.," Dear Sir,  
Monitoring the high frequency bands over the past months I have noted an alarming degree of spurious radiation from so-called diathermy machines operated by members of the medical profession.

Examination of a number of these installations reveals that the equipment is of a most elementary type comprising a self oscillator supplied with raw a.c. plate power and possessing no means of effective frequency stabilisation.

Complete lack of screening or line filters allows these machines to radiate from electrodes in the form of flat spirals or helices, according to the position of the patient's body being treated. They possess negligible electrostatic field penetration, and as the signage of several world wide patents on induction and electric heating equipment, I can say without fear of contradiction that their deep heating claims are as spurious as the widespread interference they cause.

Apparently these machines were deliberately designed to have negligible deep heating penetration, and so, cause more harm to the patient than the heat of the portion of the body being treated. They possess negligible electrostatic field penetration, and as the signage of several world wide patents on induction and electric heating equipment, I can say without fear of contradiction that their deep heating claims are as spurious as the widespread interference they cause.

Questions of medical practitioners operating such a machine as to the frequency employed, he looked at the metal name tag and seriously informed me, "It says 50 cycles." I immediately found that the oscillator of this particular machine worked on 14.6 Mc. with a field capable of being detected on an antenna erected in the street beneath the incoming power mains.

Other machines in the Northbridge area wobble about between 16 and 18 Mc. with

abominable "T1" notes having strong harmonics up to 100 Mc., and some right on Channel TV. Seeking the operation of a very bad offender, suggesting housing of the equipment in a screened room, I was informed "It wouldn't be worth it." It would appear from this that the primary motive and not the patient is the main concern.

Just imagine what would happen if an Amateur station, operating on a frequency with a highly unstable oscillator fed with raw a.c. to the plate, and no regard to whatever frequency it might be radiating on.

During the War, medical practitioners were not allowed to operate their equipment unless it was operated within a screened room capable of negligible external radiation.

As a result of this legislation, it is probable that from pilot arc welders sorely need effective attention. Motor car and welding machine manufacturers would be put to the expense of a few pounds per unit to cure this.

Having literally and figuratively poured approximately £3,000 "down the drain" in an ineffective intervention at the Geneva Conference, it is high time that the Wireless Institute of Australia sought competent legal advice with regard to the hamstringing force of regulations cluttering the operation of their members' stations.

I for one would gladly give my donation to such a fund.

—J. G. Reed, VK2JR.

## A NEW CERTIFICATE

Editor "A.R.," Dear Sir,  
The recently formed Elizabeth Amateur Radio Club is issuing a Certificate known as "The Elizabeth Award." Any amateur who has worked a number of stations situated in Elizabeth. The Certificate, attractively printed black on white, is signed by the Elizabeth Amateurs who are listed in the application.

1. Amateurs who reside in the VK Area 1 to 8 inclusive require eight (8) contacts.
2. Overseas Amateurs require six (6) contacts.
3. A.S. require 50 Mc. or above counts as two contacts.
4. Any QSO with the official club station (the call sign of which has not yet been allocated) will count as two contacts.
5. S.W. Listeners may apply, but must include the call of the station being worked by the Elizabeth Amateurs. (Calling CQ will not suffice.)
6. Applications may be made giving log details (date, time, band, etc.). QSLs are required. They should be sent to the Hon. Secretary at 142 Woodford Road, Elizabeth North, South Aus., and enclose a 5d. stamp for each contact. (Please send two International Reply Coupons).
7. All QSOs must be after 1st January, 1960.

Some of the Calls from Elizabeth are: VK4A, VK4B, VK4C, VK4D, VK4E, VK4F, VK4G, VK4H, VK4I, VK4J, VK4K, VK4L, VK4M, VK4N, VK4O, VK4P, VK4Q, VK4R, VK4S, VK4T, VK4U, VK4V, VK4W, VK4X, VK4Y, VK4Z, VK4AA, VK4AB, VK4AC, VK4AD, VK4AE, VK4AF, VK4AG, VK4AH, VK4AI, VK4AJ, VK4AK, VK4AL, VK4AM, VK4AN, VK4AO, VK4AP, VK4AQ, VK4AR, VK4AS, VK4AT, VK4AU, VK4AV, VK4AW, VK4AX, VK4AY, VK4AZ, VK4BA, VK4BB, VK4BC, VK4BD, VK4BE, VK4BF, VK4BG, VK4BH, VK4BI, VK4BJ, VK4BK, VK4BL, VK4BM, VK4BN, VK4BO, VK4BP, VK4BQ, VK4BR, VK4BS, VK4BT, VK4BU, VK4BV, VK4BW, VK4BX, VK4BY, VK4BZ, VK4CA, VK4CB, VK4CC, VK4CD, VK4CE, VK4CF, VK4CG, VK4CH, VK4CI, VK4CJ, VK4CK, VK4CL, VK4CM, VK4CN, VK4CO, VK4CP, VK4CQ, VK4CR, VK4CS, VK4CT, VK4CU, VK4CV, VK4CW, VK4CX, VK4CY, VK4CZ, VK4DA, VK4DB, VK4DC, VK4DD, VK4DE, VK4DF, VK4DG, VK4DH, VK4DI, VK4DJ, VK4DK, VK4DL, VK4DM, VK4DN, VK4DO, VK4DP, VK4DQ, VK4DR, VK4DS, VK4DT, VK4DU, VK4DV, VK4DW, VK4DX, VK4DY, VK4DZ, VK4EA, VK4EB, VK4EC, VK4ED, VK4EE, VK4EF, VK4EG, VK4EH, VK4EI, VK4EJ, VK4EK, VK4EL, VK4EM, VK4EN, VK4EO, VK4EP, VK4EQ, VK4ER, VK4ES, VK4ET, VK4EU, VK4EV, VK4EW, VK4EX, VK4EY, VK4EZ, VK4FA, VK4FB, VK4FC, VK4FD, VK4FE, VK4FF, VK4FG, VK4FH, VK4FI, VK4FJ, VK4FK, VK4FL, VK4FM, VK4FN, VK4FO, VK4FP, VK4FQ, VK4FR, VK4FS, VK4FT, VK4FU, VK4FV, VK4FW, VK4FX, VK4FY, VK4FZ, VK4GA, VK4GB, VK4GC, VK4GD, VK4GE, VK4GF, VK4GG, VK4GH, VK4GI, VK4GJ, VK4GK, VK4GL, VK4GM, VK4GN, VK4GO, VK4GP, VK4GQ, VK4GR, VK4GS, VK4GT, VK4GU, VK4GV, VK4GW, VK4GX, VK4GY, VK4GZ, VK4HA, VK4HB, VK4HC, VK4HD, VK4HE, VK4HF, VK4HG, VK4HH, VK4HI, VK4HJ, VK4HK, VK4HL, VK4HM, VK4HN, VK4HO, VK4HP, VK4HQ, VK4HR, VK4HS, VK4HT, VK4HU, VK4HV, VK4HW, VK4HX, VK4HY, VK4HZ, VK4IA, VK4IB, VK4IC, VK4ID, VK4IE, VK4IF, VK4IG, VK4IH, VK4II, VK4IJ, VK4IK, VK4IL, VK4IM, VK4IN, VK4IO, VK4IP, VK4IQ, VK4IR, VK4IS, VK4IT, VK4IU, VK4IV, VK4IW, VK4IX, VK4IY, VK4IZ, VK4JA, VK4JB, VK4JC, VK4JD, VK4JE, VK4JF, VK4JG, VK4JH, VK4JI, VK4JJ, VK4JK, VK4JL, VK4JM, VK4JN, VK4JO, VK4JP, VK4JQ, VK4JR, VK4JS, VK4JT, VK4JU, VK4JV, VK4JW, VK4JX, VK4JY, VK4JZ, VK4KA, VK4KB, VK4KC, VK4KD, VK4KE, VK4KF, VK4KG, VK4KH, VK4KI, VK4KJ, VK4KK, VK4KL, VK4KM, VK4KN, VK4KO, VK4KP, VK4KQ, VK4KR, VK4KS, VK4KT, VK4KU, VK4KV, VK4KW, VK4KX, VK4KY, VK4KZ, VK4LA, VK4LB, VK4LC, VK4LD, VK4LE, VK4LF, VK4LG, VK4LH, VK4LI, VK4LJ, VK4LK, VK4LL, VK4LM, VK4LN, VK4LO, VK4LP, VK4LQ, VK4LR, VK4LS, VK4LT, VK4LU, VK4LV, VK4LW, VK4LX, VK4LY, VK4LZ, VK4MA, VK4MB, VK4MC, VK4MD, VK4ME, VK4MF, VK4MG, VK4MH, VK4MI, VK4MJ, VK4MK, VK4ML, VK4MM, VK4MN, VK4MO, VK4MP, VK4MQ, VK4MR, VK4MS, VK4MT, VK4MU, VK4MV, VK4MW, VK4MX, VK4MY, VK4MZ, VK4NA, VK4NB, VK4NC, VK4ND, VK4NE, VK4NF, VK4NG, VK4NH, VK4NI, VK4NJ, VK4NK, VK4NL, VK4NM, VK4NN, VK4NO, VK4NP, VK4NQ, VK4NR, VK4NS, VK4NT, VK4NU, VK4NV, VK4NW, VK4NX, VK4NY, VK4NZ, VK4OA, VK4OB, VK4OC, VK4OD, VK4OE, VK4OF, VK4OG, VK4OH, VK4OI, VK4OJ, VK4OK, VK4OL, VK4OM, VK4ON, VK4OO, VK4OP, VK4OQ, VK4OR, VK4OS, VK4OT, VK4OU, VK4OV, VK4OW, VK4OX, VK4OY, VK4OZ, VK4PA, VK4PB, VK4PC, VK4PD, VK4PE, VK4PF, VK4PG, VK4PH, VK4PI, VK4PJ, VK4PK, VK4PL, VK4PM, VK4PN, VK4PO, VK4PP, VK4PQ, VK4PR, VK4PS, VK4PT, VK4PU, VK4PV, VK4PW, VK4PX, VK4PY, VK4PZ, VK4QA, VK4QB, VK4QC, VK4QD, VK4QE, VK4QF, VK4QG, VK4QH, VK4QI, VK4QJ, VK4QK, VK4QL, VK4QM, VK4QN, VK4QO, VK4QP, VK4QQ, VK4QR, VK4QS, VK4QT, VK4QU, VK4QV, VK4QW, VK4QX, VK4QY, VK4QZ, VK4RA, VK4RB, VK4RC, VK4RD, VK4RE, VK4RF, VK4RG, VK4RH, VK4RI, VK4RJ, VK4RK, VK4RL, VK4RM, VK4RN, VK4RO, VK4RP, VK4RQ, VK4RR, VK4RS, VK4RT, VK4RU, VK4RV, VK4RW, VK4RX, VK4RY, VK4RZ, VK4SA, VK4SB, VK4SC, VK4SD, VK4SE, VK4SF, VK4SG, VK4SH, VK4SI, VK4SJ, VK4SK, VK4SL, VK4SM, VK4SN, VK4SO, VK4SP, VK4SQ, VK4SR, VK4SS, VK4ST, VK4SU, VK4SV, VK4SW, VK4SX, VK4SY, VK4SZ, VK4TA, VK4TB, VK4TC, VK4TD, VK4TE, VK4TF, VK4TG, VK4TH, VK4TI, VK4TJ, VK4TK, VK4TL, VK4TM, VK4TN, VK4TO, VK4TP, VK4TQ, VK4TR, VK4TS, VK4TT, VK4TU, VK4TV, VK4TW, VK4TX, VK4TY, VK4TZ, VK4UA, VK4UB, VK4UC, VK4UD, VK4UE, VK4UF, VK4UG, VK4UH, VK4UI, VK4UJ, VK4UK, VK4UL, VK4UM, VK4UN, VK4UO, VK4UP, VK4UQ, VK4UR, VK4US, VK4UT, VK4UU, VK4UV, VK4UW, VK4UX, VK4UY, VK4UZ, VK4VA, VK4VB, VK4VC, VK4VD, VK4VE, VK4VF, VK4VG, VK4VH, VK4VI, VK4VJ, VK4VK, VK4VL, VK4VM, VK4VN, VK4VO, VK4VP, VK4VQ, VK4VR, VK4VS, VK4VT, VK4VU, VK4VV, VK4VW, VK4VX, VK4VY, VK4VZ, VK4WA, VK4WB, VK4WC, VK4WD, VK4WE, VK4WF, VK4WG, VK4WH, VK4WI, VK4WJ, VK4WK, VK4WL, VK4WM, VK4WN, VK4WO, VK4WP, VK4WQ, VK4WR, VK4WS, VK4WT, VK4WU, VK4WV, VK4WW, VK4WX, VK4WY, VK4WZ, VK4XA, VK4XB, VK4XC, VK4XD, VK4XE, VK4XF, VK4XG, VK4XH, VK4XI, VK4XJ, VK4XK, VK4XL, VK4XM, VK4XN, VK4XO, VK4XP, VK4XQ, VK4XR, VK4XS, VK4XT, VK4XU, VK4XV, VK4XW, VK4XX, VK4XY, VK4XZ, VK4YA, VK4YB, VK4YC, VK4YD, VK4YE, VK4YF, VK4YG, VK4YH, VK4YI, VK4YJ, VK4YK, VK4YL, VK4YM, VK4YN, VK4YO, VK4YP, VK4YQ, VK4YR, VK4YS, VK4YT, VK4YU, VK4YV, VK4YW, VK4YX, VK4YY, VK4YZ, VK4ZA, VK4ZB, VK4ZC, VK4ZD, VK4ZE, VK4ZF, VK4ZG, VK4ZH, VK4ZI, VK4ZJ, VK4ZK, VK4ZL, VK4ZM, VK4ZN, VK4ZO, VK4ZP, VK4ZQ, VK4ZR, VK4ZS, VK4ZT, VK4ZU, VK4ZV, VK4ZW, VK4ZX, VK4ZY, VK4ZZ.

## VISITING AMATEURS

Editor "A.R.," Dear Sir,  
On several visits this month I have experienced in contacting Amateur friends in other cities, due mainly to lack of local knowledge, and secondly, due to some inversely who not being on the air whilst I was in their area.

The above brings forward the thought of Interstate contact points for visiting amateurs. The idea I had in mind is phone number or numbers in each capital city, this number to be registered with all other Divisions of the W.I.A., so that if an Amateur were to get lost in the local Division of the W.I.A., he could then receive the appropriate number or numbers. So that when he arrived in Brisbane, Sydney, Perth, etc., and wanted to meet Amateurs, he could contact the above number and make suitable arrangements.

Extending this idea further, if one were to tour (without visiting a capital city) the road maps, as issued by the N.R.M.A., R.A.C.Q. or R.A.C.V., etc., could be on behalf of the member by the appropriate Division of the W.I.A. and suitable notations made beside the towns along the route, indicating where the nearest Amateur club or group, etc., one could go further and indicate which Amateurs are available for night time visits and which are available for daytime visits. Inversely who might or might not welcome visitors during working hours. The latter might complicate the scheme a little in that such a notation would have to indicate his desires in this matter.

It is envisaged that the foregoing or a variation of the scheme would be Australian wide.

(Continued on Page 34)

# S

**Maurice Cox, WIA-L3055**  
Flat 1, 37 Boyd Crescent,  
Olympic Village, Heidelberg,  
N.23, Victoria.

It's me again. Hi there gang, how's everyone this month? Have you plenty of DX to report?

Well, the R.D. Contest is over for another twelve months and by the time you read these words we will be into the VK-ZL Contest. I wish you all the best of luck from the VK3 gang.

Seven of us went down to Rye for the R.D. Contest and only for the high noise level, we all had a mighty time. The noise was so bad that we gave it away, packed up and went home by 1600 hours. We hope to repeat these get-togethers in the coming years; even if we don't score well, we get to know each other very well. The scoring wasn't too high, 648 points and the highest and that was me. The main thing, we had a good time.

On Friday, 26th Aug., we of VK3 held our Annual General Elections and here are follows are the new office-bearers: Mac Hilliard, L2074, President; Ian Thomas, L3065, and Mike Ide, L2013, Vice-Presidents; M. Cox, L3055, Secretary; Asst. Secretary, T. Hayward, L3072; Mntu Secretary, Ian Thomas, L3065; and the organising Committee is made up of Messrs. Hilliard, Cox, Woodman, Young, Hayward and Ide.

Sometime in February of next year, 1961, it is hoped that the VK3 Group will have a S.W.L. Convention at Shepparton. Would all those interested please contact me so as we could have a fair idea of how many of us will be there. More about this Convention in future issues.

The Oceana Contest was won by a VK4 S.w.l'er, Charles H. Thorpe, of St Dawson Road, Rockhampton, Qld. He scored 50 points. Congratulations Charles, a very fine effort when you say and I agree, band conditions were very poor indeed. Second was Don Granley, L3088, who scored 28 points, and third placing went to Eric Trebbleck and myself, both scoring 10 points. As for the wave listeners, let's face it, they were a little disappointing, don't you think chaps. Going by the grapevine, there were a lot of logs in the R.D. Contest, but you can't enter a simple one like the Oceana Contest. What's the matter, was it too hard for you all? If it was, all I can say is that none of you are short wave listeners. Let's hope that next time we run a contest that the committee receive more logs. Don't forget we run these contests for you supposedly short wave listeners.

As I mentioned last month, I am still waiting for some letters from country members, but I am not far off. Also a photo of yourselves and rig for this page. I hope to be able to put one in for the November issue. So drop me a letter with your photo chaps. I would like to see more members attend the VK3 Group meetings, because the organising committee has a lot of good ideas that are going to benefit you all.

## VICTORIA

As you already know, we had our election of office-bearers at the last meeting. Eighteen members were present, which was a sight to see. It is hoped by the officers that these 18 and more will come along to the future meetings, which will benefit one and all and we intend to have a lot of fun also.

Quite a lot of the lads are young and have not received their Amateur licences yet. This page have any old communication receivers that have broken down and are lying around in the shack looking sorry for themselves, how about donating them to the S.W.L. Group; we would be very grateful for them. These chaps are very keen, but without receivers, they really can't do much. And if you don't want, we could use it—thanks very much.

Future visits and lectures by this Group are to date a visit to George Palmers, and another talk from BERS-105, Eric.

## NEW SOUTH WALES

Gerry Albew sent along some of the news from VK2 S.w.l. Group and comment on the following. L2022 is the official scribe for the

VK2 Group and Gerry is helping a little (good for you, OM). He says the last two meetings were held with very poor attendance. Come on now VK2, you all those listeners' numbers you should have at least 60 at each meeting. You don't want other States putting you to shame do you?

Rod de Balfour paid them a visit at the last meeting. How are you Rod? How's studies? Gerry ran a contest, but due to lack of space only half the rules were printed, but he had one log from L2090, fast enough, but he's hoping for more log entries in coming contests. This will be on general short wave, so get those logs in via chaps. My word Gerry does a lot of s.w.b./c. listening and has done well.

Thanks for our birthday congratulations Gerry, and he tells me that the VK2 Group are now 2 yrs. 5 months old and have a membership of 160; if that's so, I would say 100 should be present at the meetings.

## SOUTH AUSTRALIA

From L5031, Colin Hutcheson, the VK5 news. The boys down at the mount were very busy re the R.D. Contest setting up their gear. L5031 says he's sorry for not sending in a log for the "A.R." Contest as his receiver was sick; oh well, better luck next time Colin. He says band conditions were shocking on 20 and 15 mx. L5031 has been in contact with Bob Simmonds the lone s.w.l. of Iron Knob and reports that he is still an active listener and seems to have a very good sort of using an R1155 receiver on 80, 40 and 20 mx and a Gelsco front-end converter on 15 and 10 mx and by this hope all has probably been sorted. The W3 all-band antennae, Colin says there is not much new from down this way, things are pretty quiet at the present. I am sorry to report no news this month from the VK5 group, which is very unusual. VK7 what about some news from the Apple Isle group?

## CORRESPONDENCE

Firstly, I welcome new members to the VK3 Group—P. Devitt, G. Huckerby and S. Logvenenko. Incidentally, your other State Secretaries can forward names of new members for inclusion in the S.W.L. Notes of "A.R." Have received mail from L3042 (BERS195), L2068, L3072, L2074, L3068, L5031, L2011 and L2211. From L3042 (BERS195), Eric states that he is very QRL; what with no shift-work and acting QSL Manager, he's flat out each evening and on weekends. He doesn't have a minute free. (I shouldn't think so, Eric, what with following the Magpies, etc.) Incidentally, Eric's address in the latest Call Book was wrong. It should read 340 Gilles Street, Thornbury, N.17, Vic. In the R.D. Contest, Eric put in 20 hrs. and claims 245 stations for 601 pts. He hopes all his did equally well and if not better. His total loggings now are 231.773. His outward reports total for 1960 are 1.064; his inward cards for the total 576.34 zones. 100 countries. His most recent receiver: QSL: G7F9X, ZLJAF, both firsts, K8E1Q, OX-3DL (Zone 40), VQ2CZ, ZH1FA, ZC4AK, and L2C8AR. VK3, he says did equally well at an s.w.l. meeting, maybe he will make it before the end of the year, but it's no certainty.

Arising from Eric's own experience both as an s.w.l. and as a QSL Manager, he says that as officer, he draws the attention to all VK S.w.l.'s who send out cards via the bureau. To make sure you write the correct side of the address on the top left hand corner of the reverse side of the card. It sure helps the poor sorting guy.

L3068, Don Granley, Don had a hectic R.D. week-end, nothing was right. He couldn't get the 3HB or 3UW places; no antennae at home, anyhow he slung up 136 ft. E15 pts. and lost 20 ft. high and logged about 1,015 pts. What a shock! Load Don! And he made that old ART receiver work even on 10 mx. Yes, Don, 15 was open, as well as 10. He did not have a QSL card for a couple of minutes but that was all. Don says whoever wins the R.D. will have to score about 1,400 pts. He reckons he's going to knock 11,000 pts. in the VK3 Zone 40 Contest in 1962.

By the way, he's moved into his new QTH in Albany and reckons it's l.b. By Sunday

night he had the shack organised and the ART working; has not as yet got up a big antennae, only a short one 15 ft. high, 40 ft. long. Says he's ready now s.w.l. with a 20 mhz. antenna. Says the bands have been very good the last few days. He listened for 10 minutes and heard the lot.

L2080, K. Walsh. A new member to the s.w.l. ranks. He doesn't possess a receiver and he believes it possible to buy an old ART or ARS at a very low price. Well I don't know old man, best you look in the "Age" newspaper of a Sat. and you may find something suitable. Can anybody help him? We of the Group are always on the look-out for receivers, as there are quite a few of the boys without them. If I hear of any I will certainly let you know.

He's had a lend of a receiver and has logged quite a few stations. Thanks, Kevin, hope to see you at the meetings soon.

L2011, Gerry Albew. He says the broadcast band is his field and his score at the moment is: s.w. 153 countries heard, 8 QSL cards, plus 5 letters received. B.c. band, 12 countries heard. 1 QSL, Hawaii. The best DX was from the U.S. and the best DX he did log was, on L/Wave from Radio Tashkent in Russia on CQ 1029 mhz with 1000 watts. He's heard going on the b.c. band is at the moment over 80 stations from 12 countries, not including Australia, which, incidentally, he has logged 118. His receiver is a German 8 valve amp and 11 confirmed. Not bad for a beginner; he is using a Hallcrafters SX28. He put a log in the R.D. Contest and scored 733—crickey, he did me. He says in passing that it took the VK2 Group three months, plus a very strong letter from him re their organising, etc., for them to get the contest on.

Charles thinks they should have a page of do's and don'ts, plus general pointers for the new s.w.l.'s. Chas. had to find out these things and he's been writing to various persons. He received a card from ZLIAG who also sent him a copy of the Call Book. Chas. comments on the fact that it is a pleasure to know that some of the Amateurs are very helpful. You could have a point there, Chas! He began to try and get a card from each State of VK band, but found it hard to get one out of them. (The reports have been really good Chas, but keep trying.)

L2081, Col. Hutcheson. Colin would like to know how the VK3 group is getting on and how the noise level was by Rye. Colin, it wasn't too good at all; I used the noise limiter, but not so good. It distorts the speech quite a bit. It will have to be amended in the near future. Yes, I have seen the one published in "A.R." and it is very good.

Col. has a 7-tube receiver going well on 30 and 40, but has struck trouble on 20 and 15; the signals pour in, then suddenly a hissing sound cuts in, swamping the weak signal. He hopes to rectify this by adding a 2nd stage. Contest, but doesn't know what to do about it, as yet.

Col. and I are using the two 6AC7s pre-amplifier. It's very popular in the Mount and they say it lifts signals up to the 3S units. Col. has been busy winding coils for the 7-tube receiver and the 40 and 20 and 10 mhz coils and when trying to locate 10 mx on what he thought would give him 10 mx, he was most amazed to hear a ZL calling CQ 15. (Colin, it could have been a ZL, but he must have forgotten he heard it on 10 mx.) I've heard that quite often, check your coils again. Two ft. pole, 10 mhz. coil, 40 and 20 mhz. and the antenna in use is a 7 Mc. dipole and does, as he quotes, "an excellent job on 20 and 15".

L3074, Mac Hilliard. Mac said he may go to Alice Springs about the end of the year and if he does, will take his 6 mx converter and 20 mhz. coil. Ross at Contest, as a portable VK3 s.w.l. This idea is in the air at the moment, according to Mac. Mac heard

(Continued on Page 34)

**SIDEBAND**

**Bud Pounsett, VK2AQJ**  
22 Seiffert Centre,  
Queanbeyan, N.S.W.

## VKO

From Western Australia comes a report on Sideband activity in the wild flower State. Our reporter is Vic Kitney, VK5VK, who has been a sidebander of several years' experience. Here is what he writes:

"Since 1966, s.s.b. activities in this State have increased at no slow pace on a percentage basis with regard to Amateur operation. At present some nine stations are using this mode. The most recent of these is Graeme VK6GR.

"I recently had the pleasure of looking over the fine 32S1 at VK6CS; indeed it's very compact unit. This would be the most user-to-date s.s.b. transmitter in the State. Another very compact unit, still under construction, is the W2EWL Exciter being built by Ray VK6ML. Looking forward to hearing this one on the air. Also it appears that VK6BE may be the first in the State to use a high frequency xtal filter rig—still under construction. Another well known station is VK6NF, who is also in the process of re-building.

"There has been some activity on d.s.b., with VK6GU doing the most work in this field. Another station that is sizing up some gear for d.s.b. is VK6FX.

"V.h.f. has been invaded with lack of carrier by VK6ZBJ, who has a d.s.b. rig working on 50 Mc., and only contacted eight or so of the city V.h.f. Group. The problem is to encourage the other fellow to learn how to drive his receiver. s.s.b.-wise.

"Listening around, 80 mx has shown a steady amount of a.s.b. and d.s.b. working most nights. At my location, VK1GU has a most consistent signal. In this State, VK6GR is most active on 80, VK6KJ and VK6VK are heard some evenings. Sunday mornings, 40 mx was "sing-ing with sideband": 6CS, 6MK, 6RU, 6GR, 6AV and 6VK, also 6KJ.

"20 mx continues to show some changes with various brief openings to all parts of the world. T3. VK6VK."

## NEW SIDEBAND STATIONS

I am very pleased to extend a welcome to Stan VK1ASB and Mac VK3RV.

From Canberra, 1ASB has a xtal filter rig using low frequency xtals and heterodyning straight to 7136 Kc. xtal controlled. The circuit

uses a 7350 tube as a balanced modulator and another as a balanced mixer. The carrier suppression is exceedingly good and this tube does not require a 600-ohm resistor. The 6346 tube delivers the signal to the antenna. As Stan about his new shack—it is just as old as his sideband rig. Melbourne has yet another fine rig. He uses a 6346 tube for the 90° phase shifter. He should have his 807 linear in operation by this time. The design is of the phasing type and uses 12AT6's in the balanced modulator at 90° and 270°. The antenna is a 100-foot dipole on the top section of a Command transmitter tripling to 16 Mc. for 7 Mc. operation. The frequency stability is very good indeed. When I contacted V. J. Mac, he was in the 90° phase shifter. The signal with a whole 2 watts in the antenna. The final was clear and very readable. Mac has paid attention to good design and construction. He has a very good antenna. This clearly shows that this principle really pays off.

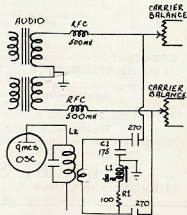
## CE9AH

In a recent conversation with an old friend, Johnny CRASH, of Macau, I found why Johnny has been absent from 20 metres. He had the misfortune to have his beam in the path of a typhoon which left the director in the form of a U and the reflector looking like an S. He now has it repaired and can again be worked with the greatest of ease. That three element beam really works. John's rig is a xtal filter job with a pair of 813s in the final. A 75A4 takes care of reception.

## BETTER R.F. PHASE-SHIFT

Several of our VK sidebanders have gone over to the r.f. phase-shift network which appeared in November 1959 "CQ" magazine. They all report that this phase-shifter is easier to adjust and "stays put". It can be readily included in your present rig and I strongly recommend it for your new one. W2EWL designs can be modified in very little time.

The improved phase-shift network was the work of Lester Earnshaw, ZL1AAX. For 9 Mc., the link on L2 is wound at the "cold" end of the coil and consists of 5 turns close-wound. L1 is 9 turns wound on a 1/4 inch powdered iron slug. Wind the coil on a 1/4 inch bolt first. The closer the iron core is

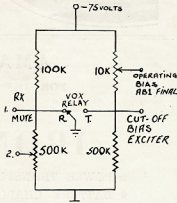


## ZL1AAX PHASE SHIFT

to the coil, the greater will be the inductance variation. R1 is 100 ohms, 3 watts carbon (three 300 ohm 1w. resistors in parallel). C1 is 175 pF. silver-mica capacitor.

## T.R. CONTROL

After the VOX relay, what then? This has presented us with some problems in the past, but I hope that this simple circuit will solve yours. About three years ago, YUIAD gave me this circuit over the air and it has been in service at VK2AQJ ever since. It uses only one set of relay contacts, in my case, the squeaky relay from an SCR522 receiver.



You have two choices for receiver muting, either from point 1 or 2. Point 2 will give you some control on your receiver sensitivity and allow you to monitor your own signal level, thus preventing that annoying hissing on that frequency. If you consider this unnecessary, you may use a 500K resistor in place of the potentiometer. If you use a zero bias final you may also use a 10K fixed resistor in place of the potentiometer. In my receiver, I have found that connecting the suppressor grids of the r.f. stage(s) and the control grid resistor of the first audio stage, suitably, will give you the best results. Applying bias to the a.v.c. line has undesired

(Continued on Page 34)



One of our ardent Sidebenders is Keith VZBK, of Bondi. Here he is with the equipment that puts out that big loud signal. The transmitter is housed above Keith's left shoulder and is the old favourite W2EWL design. A remote control is responsible for the excellent stability while an SX35 and much modified CR100 takes care of receiving. Various test and monitoring equipment completes this neat living-room layout.



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## PREDICTION CHART, OCT. '60

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# DX

John C. Pinnell, VK2ZR  
15 Summit Avenue,  
Eastwood, N.S.W.  
Phone: UW 4343.

Band conditions this month have been very changeable, some periods poor and others good. At times it needed more careful listening and skill calling to get the elusive one. However, there is still plenty of DX-peditions and other stations operating in remote parts to keep the DX chaser fully occupied and to test his skill.

## NEWS AND NOTES

VP5GY, British Guiana, is active most days between 0630 and 1030z. He is to be found on 14 Mc. c.w.

Rundy W3ZA is planning a trip to French Somaliland from December 8-12. The call will be FLEZA on all bands, c.w. and s.b. Those who missed their card from VR3Y should contact Don at his home address at G3MKG. All cards received have been answered via the Bureau, but somehow a few have gone astray. Try again.

Eric ST2AR is now in London on leave, but expects to be back in the Sudan early in November.

Those who worked HCRCB recently may be interested to know that K4KYB does not handle his QSLs. K4KYB says he has received many cards for HCRCB, but knows all of the apparent bootleggers. (W5EX)

V5BAHM, who was the QSL Manager for the Aden District, is now in England. Ray VS8AF is now the official QSL Bureau Manager.

Andre YB3CJ has now gone back to France. You can contact him at FZLI.

CR8AC and CR8XG have been worked from Gen. Ciba in Italy mostly on phone 21 Mc.; and CR8XG on 14 Mc. c.w.

Socorro Island, XE4, DX-pedition will take place during the last week-end of January 1961. It is understood that VE2VM will be joining the party.

TZ2FWF is active over the week-ends from 1100z on Friday. He is on 14 and 21 Mc. c.w. and s.b. QSL via his home station KA4PM or direct to TZ2FWF, 607 A.C.W. Squadron, Box 174, A.P.O. #1, Fort Kiley, N.Y.

VS8AA was a pile-up in the British, no cards forthcoming. This was checked personally with the Aden license authorities by Rundy W3ZA.

MP4DAI, MP4DAI is now in England and may be reached at his home station G2SB.

The following constitutes five new and separate country listings and each to become acceptable for DXCC credit as of Nov. 1, 1960:

Marcus Island—Confirmations dated Nov. 15, 1945 or later;

Mali Federation—Confirmations dated June 20, 1960, or later;

Mauritania—Confirmations dated June 20, 1960, or later;

Russia-Urundi—Confirmations dated June 20, 1960, or later;

Somalia Republic—Confirmation dated July 1, 1960, or later;

Cayman Islands—Effective immediately, the Cayman Islands listings to and counts as in its pre-June 1958 status.

The five following countries are deleted from the listings:

British Somaliland;

Korea-Finnish Republic, as of June 30, '60;

Tanzania, as of June 20, 1960;

Wrangel Island, effective immediately. (From A.R.R.L. Bulletin-759)

Can we please once and for all clear up the VS8AF situation? The situation is as follows: The person in charge of radio license in the Arabian Gulf is Her Britannic Majesty's Political Resident in the Persian Gulf (to give him his title) is the British Political Resident, P.O. Box 3, Bahrain, by a Mr. Grath, on behalf of the H.B.M.'s Political Resident. The aforementioned Mr. Grath checks

with the British Political Agent in each territory before issuing a license for that territory. The authorities in Aden have no powers; radio listening or transmitting is prohibited. The correct call for the entire Sultanate of Muscat and Oman is MP4M. The stations who signed VS80 and ZB8A/VS8 operated without permission and were deported by the R.A.F. by request of the Sultan.

The stations signing VS80A, OC and OM are also unlicensed and operate from the R.A.F. base only with the permission of the R.A.F. commander who has no license issuing power. Despite frequent requests, the VS80 stations have not applied to the authorities for permits, possibly because they do not hold sufficient qualifications to obtain a proper license. All the above information can be checked by writing to the proper authorities at the Box No. given above. The latest license holder is Rundy W3ZA, ODCT, who has been issued the call sign MG4, 4742 and 40AQ, for operation in the Gulf during the fall this year. (Bryan A. Bisle, G4OFL)

I wish to thank the West Gulf DX Club in Odessa, Texas, for much of the news in the above notes.

ZD9AM is active on 14 Mc. and expects to be on Lough Island for some time. QSLs will be slow as next mail is in March 1961. QTH for mail, C/o G.P.O. Captown, via Tristan da Cunha. (VK3QL)

PY7IL, Fernando de Noronha, is active on 21 Mc. c.w. round 00-2100z, sometimes heard on 2150 Mc. (VK3QL)

WOJLF reports the ship "Hope" will be heading back to the life in September. They hope to get a license to operate from PK-land.

KA1GR has now joined the Yams III, as additional crew and operator. Danny has his bride aboard the pack ice, KA1GR is no longer QSL Manager for the Yams voyage, but will complete the HK0AA confirmations. It is understood that W8EWS is the new QSL manager.

YAE2B is active from Afghanistan on 21 Mc. c.w. His address is P.O. Box 135, Kabul Afghanistan.

Tom Christian, VR1TC, should be on the air any time now as he has a new tx which was presented to him by Hans from all over America. VR8AC, also of Pitcairn Island, should be back home sometime this month after a visit to the U.S.A.

Jan Mayer, K9VIL, LA3SG/P, is back in Norway, but this rare spot will have LA1NG/P to carry on the good work on both c.w. and s.b.

ZS6IF has not yet completely settled his plan for his trip to Bechuanaland, but ZS6IF/P should be on the air during the first or second week of November.

Fernando C23AF is the first and only Madeira Island station on s.b. All gear is home-made and runs about 60 watts.

Korean HMB cutters were reported to be phones, but it now appears that these calls are being issued to Korean nationals. HMB was scheduled to start operation on August 13 from Cheju Island, off the coast of Korea. It is not a new DXCC country.

The WABPD DX-pedition frequencies are as follows: 21 Mc.—2620, 2100, 1420, 760; s.b.—2640, 2120, 1410; s.b.—2650, 2140 and 2120, 1430 or 1410 Kc. (VK3QL)

Some 14 Mc. c.w. sals coming through between 0300 and 0800z: ZL4C, Campbell Island; FB5YU, Antarctica; ZL3BV, Chatham Island; OV1R, ZP1BE, ZL4G, HMA/P, Korea, 1800-2100z; SM4P/P, ZL3BF, ZL4AK, VP6G/P, ZB2AD, IS1DKL, UO5SA, F780.

## ACTIVITIES

Laurie VK3ABE was not as active as usual. He worked KMBI and VR1D (Xmas Island) on 7 Mc. c.w., also heard DUTSV on this band.

14 Mc. c.w., worked was VP2VA, E19V, PI1WZ, KL7AL, and heard ST2AR (0324z), EP5X (0427z), ZL4C, ZL4AF, ZL4AF.

Frank VK3QL is still on 23 watts and has worked ELAA, EA8CG, BV3HPT, JT1KAA, LX3EQ, VS4ANI, XZ2TH, HLKRT and ZC5AE on 14 Mc. c.w., plus SW1W and FB5X on 21 Mc. c.w. ZDIAW was heard on 14 Mc. c.w.

If you should happen to hear 3QL referred to as "Frontier Frank" I will let you into the secret how it all came about. He received his Ranger Certificate from the West Gulf DX Club in Texas and is now known in that Club as "Frontier Frank".

VK1ZK worked 94 Europeans for the month which included, all on 14 Mc. c.w. F2MA, DL1MK, DM3BR, G3LXL, HA5CF, HB9TU, LA4ZC, OI8NK, OE8FS, OK4KFP, ON4FU, OZ1LF, PA0RL, UA1K1W, UP3KH/P, UH8DA, UBSUW, SMS8AS, YU2ZW, SP5ZZ, ZC4AE, also UA6KKS, HMA/P, KP4AQY, BV3HPT.

Ian L3065, VK1ZHR, has sent a list of stations heard which includes one new country, VR3KD, Christmas Island. This brings his total to 121. He has not been so active as he is working to get his 2 m x tx perking so that he will be on the air soon. 14 Mc. a.m.: 4X4AS, XE2SA, KL17BK, G3NNT, KA9CG, VE3CE, KL1DQE, PJ3AO, VR1PD, JA8C, KM3V, TG9TP, AS1YL, VR1P, XE2FG, VR1D, VK0PM, UA1KUA, KR6AF, G2FU, G2AMG, PA0FM, HF0FG, OA6CV, VK0KJ, KA2RA, VY7DK, KA20J, I15M, GP0J, s.b. X3CIV, VS4PL, KR6CR, V5BCU, YK0U, 21 Mc. a.m.: WA6JRD, YV1QE, KGATJ, VQ1E, ZLA 28 Mc. a.m.: WSFQK

421F BEAS-18, list of stations heard include: 35 Mc. a.m.: VK0WH; c.w.: VK0IT, 7 Mc. c.w.: G3FPG, SP2AKA, UA6KE, UC2BG, VK-6PM, VS80A, 0002z; SP1L/M, 14 Mc. a.m.: VK1A, 50 VR1D signals; c.w.: CM2R, FB5X, G2FZC, ZJ2PO, KC6JB, KMB6I, PY2CK, UL7FA, UMBKAB, UN1AE, UPK1NK, UQ2AK, VS4PL, VK0KJ, VK0KJ, V5BEM, V5BEM, V5BEM, XZ2BB, XZ2TH, YS10, 0M2FO, XSDQW/M.

Hope you had a pleasant trip during the holidays, and that the wax was not too cold for camping. Eric's countries confirmed now stands at 256 with 13 more still on the hook waiting for signals. He has already received QSLs for 100 countries so far this year.

Frank Seeber, Victoria, found the bands have improved as from the middle of August, particularly from Europe and South America. His logging went on, received, on 14 Mc. five-tube super mainly between 1700-1800 A.E.T. and all on 14 Mc. phone: GP9Q, F9GQ, F9GQ, F9GQ, OA1A, VR1D, HB8KX, F72M, VK0WH, VE7CE, VK0PM, PA0FM, EA3CY, HK3LK, XE1JP, G3NNT, G2FU, KL7DD, KL7DK, YV5AIP, G3JIM, OA4CV, HK1CT, TK3H, F8C/P, CN8CS.

A. Wessett, L2136, is using RX HQ170, Tri-band Cubical Quad, plus a 50 Mc. 4-el. JAG. He heard several Japanese and one very weak VK4 on 14 Mc. c.w. The JAG was working 1BNB, 1BWD, ZBOD, ZBET, 2AQ, 3AYR, 6T1. They were calling or working VK4. Signals heard on other bands were: 28 Mc. phone, H5TGA, 21 Mc. phone, H1CTE, K1H40, OZ4FA; 14 Mc. phone, DJ1EZ, HS1JK, KA2HM, OE3K1K, PY3RJ, TG8NO, UBSJF, VE6GF, VR1F, VS4U, XWRAQ.

## QSLs RECEIVED

2QL: FQ8HA, VU2ANI, VS9BM, CN2BK, VR3Z, 2ZL: VU2ANI, CN2BK, ZB21, plus 81, mostly Europe and Asia.

BERS-185: FG7FX: OX1DL, VQ8CZ, YV1DC, ZB1FA, ZC1AK, ZC5AE, ZL1AF.

## ADDRESSES

BV3HPT—Box 11, Haintin, Taiwan, Formosa. (2Q1)

JT1KAA—Box 639, Ulan Bator, Mongolian People's Republic. (2Q1)

LX3EQ—Via DL5EQ. (2Q1)

FG7FX—Marcu, Agastin, Moule, Guadeloupe (BERS-185)

OX1DL—Ole, Pedersen, Narssarsuaq, Greenland. (BERS-185)

YV1DC—Rafael Jose Pardi, Miranda 42, Boca-Ron-Estado Trujillo, Venezuela. (BERS-185)

ZC5AE—Sgt. D. Phillips, R.A.F. Detachment, Ulan, British North Borneo. (BERS-185)

## (Continued from Page 30)

**L3072, Tom Hayward.** Our illustrious hard-working Asst. Secretary (oh, yeah!) wrote me and comments, make it a rule to send a report to Radio Prague from time to time, because they really treat their listeners well. A fortnight ago they sent him a terrific first-day stamp of the Olympic Games from Paris and two letters he received were covered with stamps. Also they sent two postcards of the Gymnastic meeting which is held every five years. So far this year he has received a map, coloured pennant, numerous QSL cards, a bundle of books with more to follow. For the time being he has one more ticket in his lottery, which will be drawn in January next year—he has four to date.

**V.O.A. AMATEUR SESSION**  
The Amateur session from the V.O.A. can be heard here in VK-land on the following frequencies at 0715 to 0730 E.A.S.T. Monday mornings. Mind you, a lot of these frequencies won't be of use to us but herewith the com-

Courier Rhodes	.....	1259	Middle East
Munich	.....	3980	Europe
Munich	.....	6185	Europe
Courier Rhodes	.....	7260	Middle East
Salonika	.....	9520	Europe
Courier Rhodes	.....	9530	Middle East
Tangier	.....	9620	Europe
Munich	.....	9635	Middle East
Munich	.....	11760	East Africa
WDSL (U.S.A.)	.....	15205	Europe
WDSL (U.S.A.)	.....	17740	West Africa
WDSL (U.S.A.)	.....	21505	Europe
WLWO (U.S.A.)	.....	21810	West Africa
Okinawa	.....	7155	East Asia
Manila	.....	9700	East Asia
Manila	.....	11820	East Asia

Week day, 1000-1050 G.M.T., in English, on 21480 and 17775 Kc.; 1100-1250, in Dutch, on 21480 and 15425 Kc.; 2030-2050, in Dutch, on 15220 and 11730 Kc. On Sundays, 1030-1200, Happy Session, on 21565 and 17775 Kc.

Only one s.w.l. has been listening on 80 mx this month. Apparently it has been good, anyhow L3042 has heard VK0IT and 0WH on c.w. of course. 40 mx; for one I haven't been down there, but L3042 has and he has logged the following: VK0PM, SP1LH/MM, SP2KAE, UCBZG, VS0AA, UA6KEB, G3FPQ, SL4AY/MM, W5WQN/MM, EA7HE, U2CPC, UA3LI and SM-2AQB—all c.w. That's all for 40 mx and apparently it's been OK on 20 mx.

13042. Phone. As I said last month Eric, cut out these phone loggings—do you know he's added two more this month. VK9RH (that's the second time), VR1D and VK0WH; now his c.w. calls heard: JZ0PO, VK3TF (Darwin), VK0PN, KC8JB, PY2CK, UR2AT, GC-2FCZ, UQ2AX, UH8KBA, VR3KD, UC2BG, UP-2KNP, K5DQW, XZ2BB, KM6BI, LX1AC, ZC-5AE, UL7CZ, VR1E.

L3077. Frosty. He's been doing well since he collected his HRO; has heard 22 countries to date, and the following are some of the callsigns he has heard: 2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2L, 2M, 2N, 2O, 2P, 2Q, 2R, 2S, 2T, 2U, 2V, 2W, 2X, 2Y, 2Z, 2AA, 2AB, 2AC, 2AD, 2AE, 2AF, 2AG, 2AH, 2AI, 2AJ, 2AK, 2AL, 2AM, 2AN, 2AO, 2AP, 2AQ, 2AR, 2AS, 2AT, 2AU, 2AV, 2AW, 2AX, 2AY, 2AZ, 2BA, 2BB, 2BC, 2BD, 2BE, 2BF, 2BG, 2BH, 2BI, 2BJ, 2BK, 2BL, 2BM, 2BN, 2BO, 2BP, 2BQ, 2BR, 2BS, 2BT, 2BU, 2BV, 2BW, 2BX, 2BY, 2BZ, 2CA, 2CB, 2CC, 2CD, 2CE, 2CF, 2CG, 2CH, 2CI, 2CJ, 2CK, 2CL, 2CM, 2CN, 2CO, 2CP, 2CQ, 2CR, 2CS, 2CT, 2CU, 2CV, 2CW, 2CX, 2CY, 2CZ, 2DA, 2DB, 2DC, 2DD, 2DE, 2DF, 2DG, 2DH, 2DI, 2DJ, 2DK, 2DL, 2DM, 2DN, 2DO, 2DP, 2DQ, 2DR, 2DS, 2DT, 2DU, 2DV, 2DW, 2DX, 2DY, 2DZ, 2EA, 2EB, 2EC, 2ED, 2EE, 2EF, 2EG, 2EH, 2EI, 2EJ, 2EK, 2EL, 2EM, 2EN, 2EO, 2EP, 2EQ, 2ER, 2ES, 2ET, 2EU, 2EV, 2EW, 2EX, 2EY, 2EZ, 2FA, 2FB, 2FC, 2FD, 2FE, 2FF, 2FG, 2FH, 2FI, 2FJ, 2FK, 2FL, 2FM, 2FN, 2FO, 2FP, 2FQ, 2FR, 2FS, 2FT, 2FU, 2FV, 2FW, 2FX, 2FY, 2FZ, 2GA, 2GB, 2GC, 2GD, 2GE, 2GF, 2GG, 2GH, 2GI, 2GJ, 2GK, 2GL, 2GM, 2GN, 2GO, 2GP, 2GQ, 2GR, 2GS, 2GT, 2GU, 2GV, 2GW, 2GX, 2GY, 2GZ, 2HA, 2HB, 2HC, 2HD, 2HE, 2HF, 2HG, 2HH, 2HI, 2HJ, 2HK, 2HL, 2HM, 2HN, 2HO, 2HP, 2HQ, 2HR, 2HS, 2HT, 2HU, 2HV, 2HW, 2HX, 2HY, 2HZ, 2IA, 2IB, 2IC, 2ID, 2IE, 2IF, 2IG, 2IH, 2II, 2IJ, 2IK, 2IL, 2IM, 2IN, 2IO, 2IP, 2IQ, 2IR, 2IS, 2IT, 2IU, 2IV, 2IW, 2IX, 2IY, 2IZ, 2JA, 2JB, 2JC, 2JD, 2JE, 2JF, 2JG, 2JH, 2JI, 2JJ, 2JK, 2JL, 2JM, 2JN, 2JO, 2JP, 2JQ, 2JR, 2JS, 2JT, 2JU, 2JV, 2JW, 2JX, 2JY, 2JZ, 2KA, 2KB, 2KC, 2KD, 2KE, 2KF, 2KG, 2KH, 2KI, 2KJ, 2KK, 2KL, 2KM, 2KN, 2KO, 2KP, 2KQ, 2KR, 2KS, 2KT, 2KU, 2KV, 2KW, 2KX, 2KY, 2KZ, 2LA, 2LB, 2LC, 2LD, 2LE, 2LF, 2LG, 2LH, 2LI, 2LJ, 2LK, 2LL, 2LM, 2LN, 2LO, 2LP, 2LQ, 2LR, 2LS, 2LT, 2LU, 2LV, 2LW, 2LX, 2LY, 2LZ, 2MA, 2MB, 2MC, 2MD, 2ME, 2MF, 2MG, 2MH, 2MI, 2MJ, 2MK, 2ML, 2MM, 2MN, 2MO, 2MP, 2MQ, 2MR, 2MS, 2MT, 2MU, 2MV, 2MW, 2MX, 2MY, 2MZ, 2NA, 2NB, 2NC, 2ND, 2NE, 2NF, 2NG, 2NH, 2NI, 2NJ, 2NK, 2NL, 2NM, 2NN, 2NO, 2NP, 2NQ, 2NR, 2NS, 2NT, 2NU, 2NV, 2NW, 2NX, 2NY, 2NZ, 2OA, 2OB, 2OC, 2OD, 2OE, 2OF, 2OG, 2OH, 2OI, 2OJ, 2OK, 2OL, 2OM, 2ON, 2OO, 2OP, 2OQ, 2OR, 2OS, 2OT, 2OU, 2OV, 2OW, 2OX, 2OY, 2OZ, 2PA, 2PB, 2PC, 2PD, 2PE, 2PF, 2PG, 2PH, 2PI, 2PJ, 2PK, 2PL, 2PM, 2PN, 2PO, 2PP, 2PQ, 2PR, 2PS, 2PT, 2PU, 2PV, 2PW, 2PX, 2PY, 2PZ, 2QA, 2QB, 2QC, 2QD, 2QE, 2QF, 2QG, 2QH, 2QI, 2QJ, 2QK, 2QL, 2QM, 2QN, 2QO, 2QP, 2QQ, 2QR, 2QS, 2QT, 2QU, 2QV, 2QW, 2QX, 2QY, 2QZ, 2RA, 2RB, 2RC, 2RD, 2RE, 2RF, 2RG, 2RH, 2RI, 2RJ, 2RK, 2RL, 2RM, 2RN, 2RO, 2RP, 2RQ, 2RR, 2RS, 2RT, 2RU, 2RV, 2RW, 2RX, 2RY, 2RZ, 2SA, 2SB, 2SC, 2SD, 2SE, 2SF, 2SG, 2SH, 2SI, 2SJ, 2SK, 2SL, 2SM, 2SN, 2SO, 2SP, 2SQ, 2SR, 2SS, 2ST, 2SU, 2SV, 2SW, 2SX, 2SY, 2SZ, 2TA, 2TB, 2TC, 2TD, 2TE, 2TF, 2TG, 2TH, 2TI, 2TJ, 2TK, 2TL, 2TM, 2TN, 2TO, 2TP, 2TQ, 2TR, 2TS, 2TT, 2TU, 2TV, 2TW, 2TX, 2TY, 2TZ, 2UA, 2UB, 2UC, 2UD, 2UE, 2UF, 2UG, 2UH, 2UI, 2UJ, 2UK, 2UL, 2UM, 2UN, 2UO, 2UP, 2UQ, 2UR, 2US, 2UT, 2UU, 2UV, 2UW, 2UX, 2UY, 2UZ, 2VA, 2VB, 2VC, 2VD, 2VE, 2VF, 2VG, 2VH, 2VI, 2VJ, 2VK, 2VL, 2VM, 2VN, 2VO, 2VP, 2VQ, 2VR, 2VS, 2VT, 2VU, 2VV, 2VW, 2VX, 2VY, 2VZ, 2WA, 2WB, 2WC, 2WD, 2WE, 2WF, 2WG, 2WH, 2WI, 2WJ, 2WK, 2WL, 2WM, 2WN, 2WO, 2WP, 2WQ, 2WR, 2WS, 2WT, 2WU, 2WV, 2WW, 2WX, 2WY, 2WZ, 2XA, 2XB, 2XC, 2XD, 2XE, 2XF, 2XG, 2XH, 2XI, 2XJ, 2XK, 2XL, 2XM, 2XN, 2XO, 2XP, 2XQ, 2XR, 2XS, 2XT, 2XU, 2XV, 2XW, 2XX, 2XY, 2XZ, 2YA, 2YB, 2YC, 2YD, 2YE, 2YF, 2YG, 2YH, 2YI, 2YJ, 2YK, 2YL, 2YM, 2YN, 2YO, 2YP, 2YQ, 2YR, 2YS, 2YT, 2YU, 2YV, 2YW, 2YX, 2YY, 2YZ, 2ZA, 2ZB, 2ZC, 2ZD, 2ZE, 2ZF, 2ZG, 2ZH, 2ZI, 2ZJ, 2ZK, 2ZL, 2ZM, 2ZN, 2ZO, 2ZP, 2ZQ, 2ZR, 2ZS, 2ZT, 2ZU, 2ZV, 2ZW, 2ZX, 2ZY, 2ZZ, 2AA, 2AB, 2AC, 2AD, 2AE, 2AF, 2AG, 2AH, 2AI, 2AJ, 2AK, 2AL, 2AM, 2AN, 2AO, 2AP, 2AQ, 2AR, 2AS, 2AT, 2AU, 2AV, 2AW, 2AX, 2AY, 2AZ, 2BA, 2BB, 2BC, 2BD, 2BE, 2BF, 2BG, 2BH, 2BI, 2BJ, 2BK, 2BL, 2BM, 2BN, 2BO, 2BP, 2BQ, 2BR, 2BS, 2BT, 2BU, 2BV, 2BW, 2BX, 2BY, 2BZ, 2CA, 2CB, 2CC, 2CD, 2CE, 2CF, 2CG, 2CH, 2CI, 2CJ, 2CK, 2CL, 2CM, 2CN, 2CO, 2CP, 2CQ, 2CR, 2CS, 2CT, 2CU, 2CV, 2CW, 2CX, 2CY, 2CZ, 2DA, 2DB, 2DC, 2DD, 2DE, 2DF, 2DG, 2DH, 2DI, 2DJ, 2DK, 2DL, 2DM, 2DN, 2DO, 2DP, 2DQ, 2DR, 2DS, 2DT, 2DU, 2DV, 2DW, 2DX, 2DY, 2DZ, 2EA, 2EB, 2EC, 2ED, 2EE, 2EF, 2EG, 2EH, 2EI, 2EJ, 2EK, 2EL, 2EM, 2EN, 2EO, 2EP, 2EQ, 2ER, 2ES, 2ET, 2EU, 2EV, 2EW, 2EX, 2EY, 2EZ, 2FA, 2FB, 2FC, 2FD, 2FE, 2FF, 2FG, 2FH, 2FI, 2FJ, 2FK, 2FL, 2FM, 2FN, 2FO, 2FP, 2FQ, 2FR, 2FS, 2FT, 2FU, 2FV, 2FW, 2FX, 2FY, 2FZ, 2GA, 2GB, 2GC, 2GD, 2GE, 2GF, 2GG, 2GH, 2GI, 2GJ, 2GK, 2GL, 2GM, 2GN, 2GO, 2GP, 2GQ, 2GR, 2GS, 2GT, 2GU, 2GV, 2GW, 2GX, 2GY, 2GZ, 2HA, 2HB, 2HC, 2HD, 2HE, 2HF, 2HG, 2HH, 2HI, 2HJ, 2HK, 2HL, 2HM, 2HN, 2HO, 2HP, 2HQ, 2HR, 2HS, 2HT, 2HU, 2HV, 2HW, 2HX, 2HY, 2HZ, 2IA, 2IB, 2IC, 2ID, 2IE, 2IF, 2IG, 2IH, 2II, 2IJ, 2IK, 2IL, 2IM, 2IN, 2IO, 2IP, 2IQ, 2IR, 2IS, 2IT, 2IU, 2IV, 2IW, 2IX, 2IY, 2IZ, 2JA, 2JB, 2JC, 2JD, 2JE, 2JF, 2JG, 2JH, 2JI, 2JJ, 2JK, 2JL, 2JM, 2JN, 2JO, 2JP, 2JQ, 2JR, 2JS, 2JT, 2JU, 2JV, 2JW, 2JX, 2JY, 2JZ, 2KA, 2KB, 2KC, 2KD, 2KE, 2KF, 2KG, 2KH, 2KI, 2KJ, 2KK, 2KL, 2KM, 2KN, 2KO

21 Me. Well it's up to me and Mac L3074. Now let's see what Mac has heard on 21 Me. ZS1CO, CR7CK, VS3GS, 5A1TA, ZS1B, ZS1JA, 9M2EZ, HK7AB, CR9AN, VA9KOG, CT1OU.

KR2JD. Myself: Well not bad, had a good night on 4th Sept. on 21 Mc. Starting at 2105 E.A.S.T. I logged the following: FK1BAU, K8CVCB, G3HFD, G3HWU, G3JAF, 11VA working UH8BN (wish I could have heard UH8, but no luck), then 45TYL, DL7BA and 9N1MM, all those in 36 minutes. Actually 21 Mc. has been good to W.S. in afternoon and three days last week at night to Europe.

2105 E.A.S.T. I had a good bag for this band has been patchy. Geo. Macs only logged three so 28 Mc. has been rather poor. He heard JA6KZ, UA5BQ, KH6BJV, s.w.b.c.

		Heard Confirm. Zones		
L2042	Eric Trebilcock	269	285	40
L2022	Dan Grantley	200	57	28
L3035	Charles Balfour	181	205	28
L2064	Rod de Balfour	168	106	30
L3075	Mac Hilliard	173	52	23
L2065	Ian Thomas	118	16	13
L2074	Yrca	114	28	13
L3015	Mike, Ide	86	28	8
L0931	C. Hutcheson	86	2	2
L1185	A. Chatto	79		
L2072	Fern Hayward	80	11	10
L2158		79		
L2159	B. Coombe	73	2	2
L2088	Dan Grantley	51	51	
L5020	P. Aslin	40	3	2
L2211	C. Abernethy	35	5	
L5026	Gary Smith	26	1	1
L2077	C. Trebilcock	22	22	
L2052	T. Mills	14	2	2
L2011	G. Albeck	11	2	
L2155	P. Irvine	5		
L2050	W. Newman	4	1	1
L2057	R. Wood	3	3	

Well lads, this is your lot for this month. Don't forget those letters. I am always pleased to hear from any s.w.l. in VK land. So the very best of DX. 73. Maurice.

## Continued from Page 29

so that an Amateur from any State would not be lost in a strange State.

Whether or not there would be any charge for this additional service could be an arrangement between States or could be purely a matter of State policy.

Admittedly there might be flaws in the idea, but I feel that fundamentally the basic idea has a lot of merit.

—S. E. Molen, VK2SG.

[The following is an extract from a letter to the Secretary of the VK3 V.h.f. Group.—Ed.]

... Some time ago I built up a rather simple rig for 288 Mc., hoping to play around there for a while. The gear worked, but only just, and I had anticipated doing something more, but other interests, etc., crowded in and in the end it was dismantled.

Since the an overseas trip has "loomed up" and on 1st October I am to set off to a Radio Station (ELWA) in Monrovia, Liberia, West Africa. The station is run by the "Sudan Mission" and has four transmitters of 200, 1,000, 10,000 and 50,000 watts. (The 200w. is used mainly as a Ham unit for contact with the Field Headquarters in Jos, Nigeria, and also to the New York office of the Mission.)

So naturally the last month of two has become hectic, what with inoculations, passport, buying and packing equipment, etc. Hence VK3ZEV is not likely to be heard!

After I am on the field for a while we may be able to get 'on the air' on the Ham rig (EL2F is the Ham call sign out there). A Ham license apparently is not needed they say! but anyway the fact of having a limited ticket may satisfy the authorities. Another Australian friend out there mentioned that it's only lack of spare time that has hindered him from putting out a CQ in this direction.

—Rex Vinicombe, VK3ZEV.

On July 17, 1960, members of the Eimac Radio Club beamed their 1296 Mc. transmissions at the moon. The bounced-back signal was heard in Medfield, Mass., by WIFZJ and his wife, WIHOY. After several hours of W6HB transmissions west-to-east, the path was reversed. WIFZJ started transmitting. He was first heard at W6KEV where several of the Club members verified the reception.

## Continued from Page 31)

effects on the recovery time of the receiver, your receiver may take 30 seconds or so before you can hear the other fellow. This defeats the purpose of VOX.

DO NOT use this circuit to supply operating bias to a Class AB2 or B final because, due to the grid current drawn, the bias voltage will be most unstable.

In an attempt to discover who we first met in Australia with v.h.f. sideband, I have found out that the honour goes to Canberra Amateur Radio Club member Les VK3CZG, who contacted me on 2 mx on 25th September, 1957, working across-band with VK3IAH, who was transmitting on 40 mc. Not long after this, Les VK3CZG contacted me on 2 mx on 10th October, 1957, and on 12 December, 1957. Reg. VK3KSF came on 50 Mc. s.s.b. making the first s.s.b. appearance on the v.h.f. for Victoria. The date of this achievement is 12 December, 1957. During 1958, Les VK3CZG produced a phasing rig heterodyning to 50 Mc. in a parametric diode mixer and was the first to use a parametric diode mixer. The antenna connected to the diode mixer! He then used the r.f. stage (VR65A) of an old converter and worked VK3IAH, some miles

Things got moving in Victoria in late 1959.  
30th August, 1959, VK3SF and VK3ZGD made  
the first two-way 50 Mc. s.s.b. contact in VK.  
10th September, 1959, VK3SF worked VK3AHL  
two-way s.s.b. on 50 Mc., thereby collecting  
the first 50 Mc. s.s.b. contact in VK.  
The first s.s.b. 50 Mc. station to contact him  
31st October, 1959, VK3ZEW (at Alexandria)  
worked many of the Melbourne stations using  
50 Mc. d.s.b. 3rd November, 1959, VK3AHL  
got a ZL linear going using a CV415 with  
about 300 W. and a 50 Mc. s.s.b. transmitter  
very effective than his 50 Mc. a.m. transmitter.  
Both lines were running at about 20w. input

December, 1959, VK3ZDG on s.s.b worked VK4ZAX on d.s.b., making the first v.h.f. s.s.b. interstate contact. VK3AHL/s.s.b. worked VK4ZAX on December 1959. During December 1959 and January 1960, VK3AHL worked VK2VZ on VK3 and VK6 with a.s.b. and found one very reliable of the operators was a reduction of fading with a great improvement in readability. 9th January, 1960, was an important date when VK3AHL worked ZL2DS on 50 Mc. two-way s.s.b.

16th April, 1960, was another "first" day for VK3AHL when he worked JA8IL (a.m.), making Lance the first VK3 50 Mc. s.s.b. station to work into JA-land. Earlier in the year VK4ZAX worked JA1DLN for the first VK/JA two-way 50 Mc. s.s.b. contact. VK4ZAX has now worked all JA districts with his 50 Mc. s.s.b. rig. More than can be said for some of us h.f. s.b. operators!

July 1960 found VK3ZAT, of Druin in Gippsland, on 50 Mc. s.s.b. working into Melbourne. There is not very much information on 2 mxx from VK3, VK3ZDG in Melbourne and, s.s.b. Ballarat, VK3ZBS and VK3ZEJ are known to be on. In Sydney, Barry VK2AAB is on 2 mxx s.s.b.

Do you agree with these claims of who was first with s.b. v.h.f? (See separate article in this issue. These claims will be entered in our records in the "A.R." list pending receipt of counter claims by other Amateurs.—Ed.) If you have any other contributions for our sideband page, I will be glad to receive them. Photographs of your rig or yourself will be especially welcome. Contrasty, glossy prints are to be preferred.

The W.I.A. Victorian Division's Annual State Convention will be held on Saturday and Sunday, 5th and 6th November, at Maldon. The Convention Dinner and Meeting will be held on Saturday evening, during which time the ladies will be entertained by films. Sunday will include a visit to a gold mine, 2 mx fox hunt, 3.5 Mc. tx hunt and all-branch scramble. There will be a picnic lunch, during which an award will be made to the best male & female.

Book accommodation early with Col. Gibson, VK3FO, High Street, Maldon. See next month's issue for final details of times and venues, also listen to the broadcast.

The Annual Dinner of the Victorian Division will be held at Scotts Hotel on Friday 25th November, 1960.

# NOTES

## FEDERAL QSL BUREAU

Further to the par in Sept. "A.R." seeking information on QSL arrangements for certain VKO Calls, add these additional: CH, CX, IN, JC, NL, and NQ.

For family reasons, Joe Collister (VK9HC) had to return to W.A. from Cocos Island soon after commencing Ham activities. Joe has sent cards to those stations contacted and requests QSLs for VK9HC to be sent to him care Cable Station, Mosman Park, W.A., or via the VK6 Bureau.

Recent overseas changes in QSL Bureau addresses include—KHB: John Oka, P.O. Box 101, Aiea, Oahu, Hawaii; W/KZ: P.O. Box 666, Hillsdale, N.J., U.S.A.; CR7: Box 1234, Belira, Mozambique; VSI: M.A.R.T.S., Box 777, Singapore.

On the occasion of the 25 years existence of the association Bremen in the D.A.R.C., a "WXR" Diploma has been established. VK licensed Amateurs can qualify for the Diploma by contacting three Amateurs in Bremen, using any recognised band, either c.w. or phone. Contacts to be made since January 1, 1956. Enclose 10 I.R.C. with applications to Adolf Weiss (DJ4TT), WXR Manager, Rechenfether Strabe, 25, Bremen, Germany.

—Eric Trebilcock (BER8-168), Acting Manager.

## FEDERAL AWARDS

### W.I.A. OFFICIAL LIST OF COUNTRIES FOR DXCC PURPOSES

Vide September '60 "A.R." Mauritania and Mali Federation, formerly parts of Fr. West Africa, were given separate listings as from 30/6/60. The remaining four States of the West Africa (FF8) and the four States which comprised Fr. Equatorial Africa (FQ8) have since become independent and will be listed separately from the relevant dates as under:

Formerly Fr. West Africa, now—

Dahomey Republic—1/8/60.

Niger Republic—3/8/60.

Volta Republic—5/8/60.

Ivory Coast Republic—7/8/60.

Formerly Fr. Equatorial Africa, now—

Chad Republic—11/8/60.

Central African Republic—13/8/60.

Congo Republic—15/8/60.

Gabon Republic—17/8/60.

NOTE—Congo Rep. referred to above is distinct from 9Q8—formerly Belgian Congo.

French West Africa and French Equatorial Africa are now deleted from the Countries List. DXCC credits can still be claimed for these two listings on confirmations for contacts made prior to the independence dates of the areas concerned.

### COUNTRIES LIST FOR VK-ZL CONTEST

Re the VK-ZL DX Contest 1960, the rules provide for the A.R.R.L.'s Countries List to be used for scoring. For the purposes of this Contest the W.I.A. List may be considered identical to the aforementioned with the exception of Canton Island credits—A.R.R.L. allows both K8B and VRI.

—A. Kissick, VK3KB, Awards Manager.

## NEW SOUTH WALES

Activity within the Division has maintained a high level over the last two months. So much so in fact, that your correspondent was caught "behind the date line" last month. And now to a resume of Divisional activities.

The month of July will be remembered by historians as the beginning of a new era in the Division. The reason—the monthly meeting was held at the Divisional Headquarters located at 14 Clifton Street, Crows Nest.

The meeting, under the chairmanship of the President, Bill 2YB, was attended by some 100 odd members and visitors. The "At Home" atmosphere of the meeting was emphasised by lectures and informal social activity with a minimum of business. The most important item on the agenda was the future development of the property. Members were

enthusiastic for the Council to proceed with the development of the building and a unanimous vote authorised the Council to spend £4,000 on extensions to the building to provide a meeting hall, disposals storage, kitchen and toilet facilities.

The lectures for the evening were delivered by Leon 2AOJ on "Oscillators," and Leo 2AC on "Oscillator Stability in Receivers."

During August several new appointments were made, particularly in respect to Disposals. Alec 2ABU and Harry 2AJZ were re-appointed to the Disposals Committee, bringing the strength of this important sub-committee to five. Other members of the Committee are Keith 2ABK, Norm 2ALJ and Barney Smyth.

The August meeting was held at Science House with some fifty odd members attending. The lecture for the evening, entitled "V.h.f. and Microwave Equipment and Techniques," was delivered by Mr. Harratt of the P.M.G.'s Department to an interested, but somewhat baffled audience.

The business portion of the meeting was highlighted by an interim report on the architectural plans for the Clifton Street building. The initial estimate of cost was reported by President Bill to be inadequate and after discussion, the meeting authorised the Council to spend a larger amount than previously voted.

At a subsequent Council meeting more detailed plans were sighted by members of Council and at the time of writing these notes, the plans are being further discussed with the architect by President Bill and Phil 2ER.

See you again next issue.

### HUNTER BRANCH

Barry Goodman, VK2ZAG, was the lecturer for the month of August and gave an interesting talk, mostly concerning resistors and capacitors with a bit of u.h.f. gen thrown in. Exploded samples were distributed for examination. Don't know in what condition Barry arrives here in Sydney as someone let it out that it was his birthday the following day.

Those fortunate to be present were VKs 2AKX, 2ZL, 2AYL, 2RJ, 2ZDF, 2ZCU, 2ZNV, 2FX, 2ZJR, 2CN, 2XT, 2CS, 2SP and 2AQV. Associates in attendance were Sutherland, McLeishan, Davis, Bailey, Finch, Stebbins, Finlayson, Gray, Pearce, Temple and Webster. Quite a good roll-up considering the bitterly cold weather. My records show that President

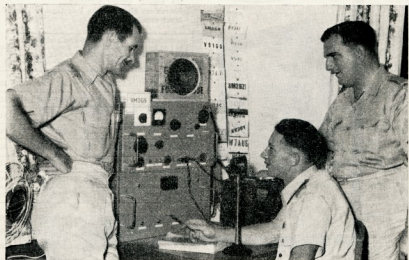
Lionel was there—we did hear his voice coming from a great heap of rags but no one saw his profile. However it appears that the local newspaper cartoonist was there, and saw him.

Keith 2AKX put on a tape he had of the A.R.C. news item concerning a school hook-up in which he and Geoff 2VU took part. Others outside the Hunter district who also took part: Booragul, Singleton, Long Jetty, Terrigal, Gundagai and Newtown. At the meeting it was resolved that the fine job done by Keith be placed on record.

At the time of writing, Varley 2SF is on holidays and has been worked on his 5-watter, north of Newcastle. Don't know how these husbands are able to get away by themselves. Hope he doesn't go near Tamworth as there is an X-cessive terror there who cuts power lines by flying a kite. What were the two arms of the law doing at Merv. 2MW the other day? Must be a duffer around there. Congrats to the members who took part in the Army exercises, believe it was quite a success.

The R.D. Contest went off with a bang but isn't it a pity that those who have social skeds couldn't refrain from mucking things up one week-end in a year. Heard one joker declare they had better not hold it and then went on to talk for ten minutes without once taking a deep breath. No doubt you heard a couple of minutes before contest time, one chappie say that he had never heard the band so quite. What an anti-climax he experienced. One wonders how long the powers that be are going to allow a couple of Amateurs who carry on ad nauseum on Sunday mornings. They are old enough in years to realise that Amateur Radio is at a cross-roads and a lot of hellcose drive could do a lot of harm.

Les 2RJ, despite many warnings from those who know, has been and done it and for a time at least a good man has been lost to the Amateurs—still they always come back, any way, congratulations Les. Harold 2AHA, who is quite a stranger these days, has been seen erecting a t.v. antenna. Sputnik is now in orbit in a new Rover—the Water Board must be paying its way. Stuart 2ZDF nearly finished re-building, but is still causing t.v. even with cold valves. Bill 2XT, when not being mine host at the social monthly gatherings, is too



FL/Lt. Keith Avery, of Brisbane, Qld. (left), watches with Cpl. Ray Pulford, of Greensborough, Vic. (right), as Flying Officer Ron Johnson, of Bondi, N.S.W., works his radio set. All three men at R.A.A.F. Butterworth are Radio Hams.

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							Mounting	Overall	Height
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3041	12	125	275	600	2 0	SCL 22	3 1/16	3 3/16 x 2 1/16	2 1/4
3042	12	150	205	600	2 6	VLN 25	2 x 1 1/4	2 1/16 x 2 1/2	3 1/8
3043	12	175	185	600	3 3	VLN 25	2 x 2 1/4	2 1/16 x 3	3 1/8
3044	12	200	165	600	4 4	VLN 31	2 1/16 x 2 1/2	3 x 3 1/16	3 1/2
3045	10	250	130	1000	5 2	VLN 34	2 1/2 x 2 1/2	3 1/16 x 3 1/2	3 1/8
3046	10	300	90	1000	6 11	VLN 34	2 1/2 x 3	3 1/16 x 4	3 1/8
3047	5-15	250-50	70	1000	5 4	VLN 31	2 1/16 x 3	3 x 3 1/16	3 1/2

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busy making money for another holiday. Must be going to Macquarie Island this time as he has been everywhere else. Harry 2AFA now going strong and practically recovered from his indisposition. Rumour has it that another Harry, 2ATX, has been seen. L.V.-sell and "B" class broadcasting and going into a chip joint. A certain famous disc-jockey has already come up with a slogan "Harry's chips very big on favour."

Pleased to hear that Jack Hamilton is back with Ron 2ASJ, even though his voice was still weak. It must cost you a lot of money to staph, hold on to it for a while. Jack, as I believe the G-boys are onto a sure cure. Ask him to tell us the story of the BCL and Terry 2TQ and his s.s.b.

Last month the transmissions of 2AWK were carried out under better conditions with the assistance of 2AYL and 2SP. It is very hard to get into Secretary Gordon's shop, these days what with literature and correspondence in connection with the Blackalls Do. As usual Gordon is doing a good piece of hard work—don't know how Ada puts up with it.

At present, Bill 2ZL is not worth two bob on the air, being almost at the point of no return trying to find out why a certain piece of test gear he had bought for his rig had repaired won't work properly. Did you hear that a certain Lady Amateur listened to a broadcast from the R.D. Contest and she discovered that it wasn't 2KZL calling CQ? Stan 2AYL, operating 2AWK portable the other night, was after call-backs on 144, but did not know who was calling. 2AAJ, now a victim of t.v.i., is no longer on the 2AWK call-back, so don't look for him after 1000 hours any more.

Well chaps you will have practically a fortnight to get over the October festivities before the October meeting which as usual will be held at the University of N.W., Tighes Hill, on the 27th. When the winter weather contains the spring feeling there should be no excuse for not being at the Bill Hall's hall on the 27th. The billiards table is under a game of billiards—no entrance fee.

#### CENTRAL COAST ZONE

The Central Coast Net on 3635 Kc. at 8.30 p.m. on Monday nights continues as usual, sometimes with as many as 10 stations joining. In Geoff 2AIL is now heard with a 122 set. It is interesting to note that he is operating from the smallest room in the house, in fact he is active from the kitchen and is building himself a shack before commencing on the gear. 2FJ is active on 80 mhz and when not so, is building a 5 inch c.r.o. and a tape deck amplifier. 2ALA has now worked dozens of test stations on his 80 mhz rig. This monster is designed for 20 mx and is about 42 ft. high, being mounted on a telegraph pole. The turning mechanism at present consists of a set of footboards.

Alec 2AAG is active on 80 mx phone using a 122 set from Avoca, also as 2AAK from Kulnura. His location is 80 mhz miles from the latter is his mountain retreat and here batteries are used. Alec is getting used to the controls of his 7 knob receiver. Your scribe has been twice out on his 80 mhz rig to visit to Avoca Beach. Ken 2AFH also recently licensed is using an ATR2B from Peat's Ridge with good results. He is also doing the coil planning of poor signals on 10 and 15 mx; he still works ZLS on 80. Wally is building a 56 mc. lux using an 829B, having fun in taming this little, but able to put out a "A.R."—Ed.] A twin beam oscilloscope is being planned. 2IN is active on 40 mx from The Entrance. 2J is active on 80 mhz and 40 mhz meetings. Trevor 2TM is building some simple gear for 56 mhz. He still uses screen modulation on the 6146 on 80 and 40 mx. A larger power rig is being built. 2PT is also planning some 56 mc. equipment.

2RU, 2AVJ, 2AMU and 2MV not active due to various reasons. 2AMU is licensed 52 Mc.—Ed.] 2ASA is heard on Mondays using 122 set from Wyong on 80 mx.

The Gosford Radio Club now has 10 licensed members who have situated in the last three years since its formation. The latest ones are

#### CONTEST CALENDAR

- Oct. 1-2—VK-ZL, phone.
- 8-9—C.W.
- 22-23—Bor. Scouts Jamboree
- 28-30—"CQ" WW DX, phone
- Nov. 25-27—" " " " C.W.
- Dec. 3-4—R.S.G.B., 21/28 phon.

Frank Jarvis and Les Lackey who are waiting for their call signs.

2AI is still heard on 80 and 40 mx on suppressed carrier. The writer, 2ON, is very pleased with the 813 Class AB linear for side-band and when neutralized is extremely well behaved. This is now preceded by two 6AG7 linears, the first in Class A and second in class B. Lookout for 2AFY on Thursday. 13th October operation on 80 mhz from the School Science Exhibition. 80 and 40 mx operation is planned.

#### ST. JOSEPH'S TECH. SCHOOL RADIO CLUB

Since the arrival of club license, 2ATQ, on 10th July the boys had about 70 QSOs, averaging two per school day. Ten interstate stations were worked in R.D. Contest and we have had seven DX contacts, chiefly W and ZL stations.

First entry in the log has a detailed description of a certain "premier fishing resort" in the remarks column. Hope the youngsters do not believe everything they're told on the air! Chief operators are Mike, John and Tony; the first two handle c.w. well, and are collecting quite a batch of QSLs. Thanks to all those who sent us some 500 sets of direct mail cards have been sent out from the club station, and only two of these went to s.w.f.s.—any reports will be acknowledged.

Operating hours are still about 1.0 and 4.0 p.m. on most week days, so give the boys a call. Don't hesitate if it happens to be 20 mx—V.C. rolls are as good as 100%.

The club is now working 104 to 897 buffer to 6146 final. Bob 2IN supplied many parts for this compact multiband rig, including 1000 ohm 500 ohm meters. Receiving was a problem until 2ZLM came to our rescue with a Philips No. 4. Now we are working on another rx and are able to lend the spare coil to your members for a week at a time. The same system is followed with spare audio oscillators for c.w. practice.

The club has also got inside the blackboard in school, and the class have had several interesting talks followed by question sessions. Wal 2AXH, Col 2ASF and Hugo 2WH were very successful in their work.

Recent visitors were Sid 2SZ (mobile) and Allan 2RX (mobile). A 2 mx mobile also called in, and my apologies are offered because I can't now recall the name.

So 72, and c.u.g.n. sn., de 2ATQ.

#### VICTORIA

##### SOUTH WESTERN ZONE

Advice has come from VK3 Division that, following the ZS's request for permission to use the 89 mhz band for W.C.E.N. work, this band may be used subject to the proviso "for emergency use and practice only." There is no time limit or restriction on the stations who may use this band. The ZS's have charged with the responsibility of policing this proviso mentioned above in our area. This permission does not prohibit any emergency work. The ZS's have said that they are not a bit more than we ask for these days!

Last month comment was invited about complete lack of interest in this band. Well, it is not like that. Kevin needs no introduction as 3AKR/M is well enough known, being a home-brew rig in an imported factory-built vehicle. Now, however, he has a new 20 mhz home-brew vehicle and the fitting of the rig is now just a question of time (and space). The vehicle is a QRP one but input as yet unknown.

Many zone stations put nice sizes up to VK4 on 80 mx in the evenings and that on the 10 mhz band. The band seems to be rather deserted up there, but 40 mx on the other hand much more populated and not so noisy. The ZS's have said that they will send a copy anywhere, but VK3 phone stations were not generally audible till late afternoon when some nice QSOs were made.

George 3AOJ has fired up again on 80 mx and here's hoping that familiar call stays with us again now that business worries have eased a little. Remember that new chariot at 3AGD's? The A wedge had made the winner on the other day and John is still talking his insurance company over. Seems that the policy doesn't cover all the possibilities. John has taken up air-welding now, but this has nothing to do with the aforementioned incident. He just likes to "be prepared." Have you thought of what to do when you don't know something when you are in QSO? John, who is a District Commissioner of Scouts, has been appointed to give an effort in the Jamboree-on-the-Air of which mention is made elsewhere.

Another O.T. to reappear is F.D. whose 7 mc rig on Moombi Lookout was f.b. However my

sig. must have been some other place but Hamilton. The municipal election brought Doug 3KJ back for his fourth term as Mayor of Colac. Nice work Doug, and here's hoping it won't be so arduous as to leave no time for his CQ. The CQ has been a little very busy now that the big rig has QRO. Chris' eagle eye noted the latest slug the fates have dealt us in the form of the new sales tax on low power transmitters. It's a 3% rate, plus 2/9 each. Now this has been replaced by a 25 per cent. sales tax which will make the low power transmitters quite a little more expensive. Exceptions are picture tubes and the high power tubes which we don't use. What about a song, chaps?

The R.D. Contest brought some rare ones on the band. Brian 3XN made a nice little tally in a short time without a CQ. Bill 3XE worked very hard for 112 contacts. Secret with Bill can hear them and others can't for each contact was followed by a score of stations wanting to work the other bloke. One outstanding fig. in the Contest was Tony 3WB. Welcome, Tony, and please didn't you hear me call you from Flinths on c.w. on the whip in the middle of the QRM?

Bob 3IC has now moved to Werribee and should be about again soon. We're missing you on the hook-up, Bob. You're still in the zone for me, Ken. I wish I had a chance coming up soon and we wish him best of luck with it. Perhaps after then Kerry you could give me some more about the attitude of yours that works so nicely on 20 mx. Was it a triangular vee beam or delta shaped folded dipole or how can one describe it? Talking of exams, I was back for the A.O.L.C.P. and is now aiming at passing the next test month. While at Warrnambool I've found Eric 3ANQ using 15 mhz and 40 mhz to take in the JAs and occasionally 20 mhz to 40 mhz. Peter 3FX has also made his debut on 21 Mc. by tripling something or other; must have been the p.a. and is succumbing to the DX bug. Gordon 3AGE makes a late appearance on 80 mx now and then with the ATR2B from the bedroom.

Things have been rather quiet at this QTH after the mobile operation. The new 20 mx converter has been completed and I spent a couple of futile hours pursuing it. I produced a signal before realising the band was completely dead. Later it came to life and produced a new country: how you can be trapped! Did anyone else hear that 2ZSK sig. on about 3553 Kc. on the 6th about 2000 hrs? He was calling "25CZ" and signed himself ROPEZ. Or was he calling a number in Adelaide earlier in the month?

Had a report from Wally 3UT on one of my 80 mx mobile contacts from VK4 one evening. Readable 5 on his vertical antenna and all on the dipole. Any explanations? Wally's harmonic, Keith, is doing some f.b. listening and has heard a lot of stations on the broadcast stations in the continent. Fair effort indeed considering the shared channels. Tim 3TW has the s.s.b. working nicely on 80 mx now using an I.R.S. generator to a 813 ZL line. The object is 15 mx and G-Land during the low of the solar cycle. A newcomer to the bands, 2AAK, is also working on 80 mhz. 2AAK/AG, Alec's QTH is Avalon Beach, except he's on the farm at Kulnura and is one of a very well known Warrnambool family at which an I.R.S. generator is being used. I've been the shack for the lure of the rod and line. Can't quite imagine why, for both pursuits could be followed from the same place.

Dale 3AZT and Elizabeth 3EJT have come to rest in Melbourne. Dale was using a 6AQ5 modulating a 6AQ5 with 24 watts on 80 mhz but ten days ago he was on 40 mhz. Many thanks to those who passed on the gen, but a further request though; what gen from Ballarat way?

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# MOORABBIN AND DISTRICT RADIO CLUB

This last month has been marked by an increase in membership. Our activities, both social and technical, are varied and seem to fit in with the other activities of our members which makes for interest and smooth running. The Crazy Whist nights have been well patronised as are all our other social events. Not quite so much to be said about the playing of a big part in such an event, and it was a cold night. The October one should be better though, for we have promise of more starters. It will be held on the evening of 12th October.

One activity which may have been overlooked by Amateur others than members, perhaps because of lack of publicity by us, is the "Honorary Membership Certificate" issued by the Club. I have just posted the latest certificate to Allan 3AKZ, who has complied with the rules and won himself the honour. A few notice it may not now be out of place. Quoting from the rules:

**Object:** The object of this award is to promote interest in, and friendship with, VK3 contacts. There are many active transmitting members of the Club. Ask all VK3 contacts: "Are you a member of the Moorabbin and District Radio Club?"

**Rules:** 1. To become eligible for the award, Australian mainland stations including VK7 stations currently financial at the date of contact.

2. Overseas stations including VK9 and VK9 call signs must contact by radio five member stations currently financial at the date of contact.

3. The Club station VK3APC may be regarded as a financial member station for this purpose.

4. On completion of the required number of contacts, the applicant must forward to the Certificate Officer by any suitable means a list of the call signs of members contacted, together with the times and dates of contact and his own correct postal address.

5. After verifying with the logs of the named member stations, a Certificate of Honorary Membership will be awarded and forwarded by post.

6. If required number of member stations is contacted for a second or subsequent time, a further award may be issued. This will take the form of an emblem for attachment to the Certificate. Stations named for

such an award must not include those already named for a previous award.

7. Honorary membership will allow all the privileges of full membership of the Club, less the contact of contacts with Honorary Members for the award of this Certificate and less the power to vote.

8. This award is not available to financial members of the Club. Station operators who have been financial members must have resigned their membership in writing prior to the date of any contacts claimed for the award of this certificate to themselves.

9. Rules and conditions of this award may be amended by a notice of motion one month prior to the date of the award at a regular meeting of the Club. After being passed by a majority of members present, the amendments will come into force.

10. The address for certificate correspondence is: Moorabbin and District Radio Club, 17 College Grove, Black, Rock, Vic.

## QUEENSLAND

### BRISSBANE AND DISTRICT

Well, at the time of writing this screed, our Secretary, Stan ASA, has been gone two weeks from his grand tour of the north. He sent a long letter from Townsville, and though it should be in my pal, 4RW's writings, you will get a kick out of this anecdote. Ted 4EW was putting up a tower and Ted, feeling more at home in a speed boat than on a tower, enlisted the support of Bob 4MF. Bob, a lot younger than Ted, was taking some time and Ted was in great trepidation lest he fail. The limo came when Bob executed a rather risky manoeuvre and Ted exclaimed, "Bob, for goodness sake be careful," and grabbed Bobbie around the waist. Bob, a bit ticklish, said coyly, "Ted, control yourself, they don't know about us yet!" and gently removed himself from Ted's amorous embrace. That story is in Stan's own style of telling "good uns" and I hope you get as much of a kick out of it as I did.

I recently had a long discussion with Mr. Farr, of Warburton-Frankl and he told me that his firm will soon be able to supply any Heathkit you want to buy. He will be sending Heathkit circulars to all the W.I.A. members

in Queensland so that you can decide what you want to buy.

In the September "A.R." there was an item on page 11 about the theft of gear from two members in Victoria. One was our Federal President, Max Hull, and I hope that you will be careful if someone, you don't know, tries to sell you any gear.

One of our members, Ian 4MO, is going for a really wonderful journey. He is going to New York by way of London by Boeing 707 to do a Research Scholarship at the University of New York. He will visit R.S.G.B. headquarters in London and A.R.R.L. headquarters in West Hartford.

For many years our audit has been done, very efficiently, by Don Hurley and everyone just took it for granted. Well, recently Stan brought Don's work up at a Council meeting and suggested that he be made a Life Member of our Division. The wonderful job he has done for us. He was approached and he said he would be delighted to have membership of the Division. Believe me, gentlemen, we should thank our lucky stars that we have such a willing helper; strangely enough, with six years on Council behind me, I know the work Don has done and I, personally, welcome him to membership.

Well, with the extra job of Acting Secretary on top of President's position, I don't seem to have any spare time these days and, though I had four years as Secretary, it's really a job and a half. So I'll QRT now and hope to have a lot more news next month.

### TOWNSVILLE

Congratulations goes to Claude 4UX as he has now six of his class of eight with the limited Z call sign. He has another class going but this time the aspirants are shooting higher, going for the broadcast and commercial tickets. Well Claude, hope they all make it. Thanks also goes to George Peterson, who allows the class to use his workshop with all the latest test gear including t.v. equipment. George is in the radio retail and interested in the R.S.G.B. and interested in the 90 Mc. boys when conditions are good.

Claude and his shadows intend to bring Amateur Radio to the notice of everyone in their district, besides getting good publicity in the local daily paper. They are putting in

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name is Ron. Stuart SMS has one pole up but unfortunately was not able to spot much time in the Contest, but did manage to collect a representative score at that. Leo 5GJ is the aforementioned gentleman in disgrace for the month of May, preventing him from getting on in the Contest, but after his reception at the meeting he has decided to resign his seat on the committee.

Claude 5CH could only spare ten minutes for the Contest but collected ten contacts, which to say the least is a pretty good average. Tom 5TW was in the contest on the 20th of Sunday morning, at early hours, to contact a VK0 on Macquarie Island on 7 Mc. Nice work, Tom. Erg 5KJ was in the contest on the 20th and made the c.w. fraternity during the Contest and also used his telephony technique when the adherents of Mr. Morse were slow in coming up.

Dave 5AW is at the moment of writing on his well earned holidays and is visiting Adelaide, probably receiving acquaintances with the city slickers. He preparing his v.h.f. gear ready for the coming summer months and now has xtal controlled rx's and tx's for the 1 to 20 Mc bands and a good signal into Mt. Gambier on those bands. Arch 5XK, who will now always be included in this list of these notes, and after all why not, has been in the contest for the month of May in his right place is, but the editor won't let me say it. He fell asleep at 2.30 a.m. during the contest and was snoring so loudly that he was despite his unintentional snooze. Strange as it may seem, Arch has a wing up his sleeve, he is becoming the lack of VKs on 80 mc, and since the VKs were so busy on 80 mc, he was not in the contest.

Col 5CJ now has his 1 and 2 mxx converters converting OK and is re-building the 2 mxx tx. He still keeps his average on 80 mc and 100 mc plus acting as my espionage agent at the usual Tantoola visitors at the meeting but he has been a bit bittern and they are excused this time. Probably out looking for that tiger, maybe.

Mystery question for this month is who was the VK1 did not appear despite the month's ground of his XYL, rose at 2 a.m. on the Contest morning, contacted a couple of stations, went outside to quieten the dog which was barking loudly and then he then had to wake the XYL to let him in???

News from the Upper Murray district tells of the misfortune that befell the late Mr. J. L. 5TL all autographs and photos obtainable through the office of his 'Charity begins at home fund', who not only had his bestest on the 20th but also had his bestest jammed his middle finger, left hand, in the office safe door. No damage disclosed to the door, but the office staff have asked several of their already extensive repertoire or should it be repertoire. Latest information to hand is that he will continue to live!

Harry 5KW has settled in at his new job in the city of culture, although he is still of his place of abode. Expect to see you at the meetings now Harry, I need someone to help me to talk up, nobody even listens to me these days. Hurdle 5BC and George 5GB noticed the other day delving into the innards of a t.v. set, the after effects of which, at the moment, is a red nose and a sore throat. I suspect my secret agent was told quite politely to be on his way as they could do a better job without him. Apparently, my well-meaning espionage agent is a little nervous.

Fred 5MA has been out portable-mobile a couple of times during this month to keep his agents in the contest. He was more than a little shy of his 22's were moth and rust proof. Tom, of course, was the shrewd one, he stayed at home because it might rain, but at least they proved that the 80 mc was more than the 40 mc for their tests, although their 40 mc signals were heard a long way from the Upper Murray.

Two events of some importance occurred in VK5 this month, the first was the visit of Ken 3APJ and his charming XYL Joan. The second was the visit of the Broadcaster to our fair city was a telephone call at about nine o'clock at night telling me that I had been invited to the contest. I was not there until I was passing through Tallam Bend that I woke up who it was, and somewhat sheepishly returned to Adelaide. They both returned to the Broadcaster station in VK, in fact Joan washed up my tea dishes and also made the tea for our supper. The reprieve was a relief, and the evening was a pleasant one and a pleasant evening was spent by all. Ken and XYL came to lunch at my QTH on the Friday and with my XYL, had a very pleasant time. I was feeling better, to say nothing of my grandson half-way through the mumps, we lined up our forces against them. I am hopeful of receiving the news any day now that the entire Pincoff

family are prostrate with either a cold or the mumps, or better still, both! I will teach them to trifle with me!

The second event was my receiving a somewhat threatening letter from my pal, Walter the Editor, which I have handed to my lawyer on the chance of a libel action. He tells me that he can see nothing wrong with it and suggested I ask a barrister from a personification complex. Be that as it may, I have now received a letter from Tom Hogan, Ron Higginshoffman, and now the reigning Editor. My dear dear Editor, I am sure that I am all along the same lines—to wit, don't talk so much, don't pad so much, in fact say what you have to say and then SHUT UP. Flattery will get them nowhere!

## TASMANIA

The R.D. Contest is again over, and we are hopeful of retaining the trophy. Congratulations to Keith 7RX on his claimed score of 971 points, the leading score for this Division. Next year we hope you top the 1,000. Keith, Myles 7MF turned in a claimed score of 792 points, with 781 actual points. The average of the six top logs should be well up in the high 800's. The Contest was remarkable for the excellence of the 80 mc band which yielded the highest number of contacts, and on the Saturday night. The big job of checking the logs is now well under way, so the Southern VK's should be conspicuous by their absence from our air during this dust time.

A decision of great importance was taken at the general meeting on 7th September. Council was directed by that meeting to undertake the raising of funds to establish our own Divisional headquarters. We hope you will see your way clear to help in this respect over the coming years. At the same meeting, Joe 7DJ delivered an excellent lecture and practical demonstration on the conversion of the BC454 receiver, which drew our warm acclamation at the time. We were also told of the appointment of VK3ZV as our representative on the Frequency Allocation Committee of Review, and we wish Arthur every success in his most arduous and important work on our behalf.

Remember the Scout Jamboree of the air, from 10 hours to 24 hours, on the 20th of 1000 hours, 24th October, 1960, E.A.S.T. It is likely that four stations will be taking part this year in the South and we hear that one station from the North will also be participating.

We were sorry to learn of the serious illness of Mrs. J. M. Duff, the wife of Mr. Duff, explaining the silence of Rupe. We wish Mrs. Barker a speedy and complete return to full health. Rupe has ceased his employment with the well known concern which took him around the State, and he is now employed by a large electrical concern in connection with t.v.

Re-broadcasting of the Sunday morning Institute broadcast has now begun on the 50 and 144 Mc. bands. I had a letter from G5NGF just recently. The Rev. A. W. Sheppard, of 75 Park Road, Mansfield, Woodhouse, Notts., England, has been elected Moderator of the compiling a register of Methodist Amateurs throughout the world as a side-issue of his World Christian Methodist Amateurs and Clubs. If you are a Methodist and would like your name included in the register, write to G5NGF at that address. If you are interested in a word of which took him around the State, and he is now employed by a large electrical concern in connection with t.v.

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completing the necessary formalities and gathering unto himself some gear.

Dave TDA has gotten away to a flying start and has very successfully worked into W land with his 7x's, ending the 40 mc dipole on 20 mc. Ellis 7XA is busy putting the finishing touches to his rx to end all rx's. (How about details for "A.R."—Ed.) Sam 7SM is progressing with the new final and is still putting a healthy signal on the air with his exciter unit. Kevin 7ZAH hasn't got his 2 mxx gear functioning yet, I do believe he is displaying XYL interest at the moment which naturally restricts Ham activities. Max 7MX is, I understand, showing tendencies toward negative peak clipping; best of luck Max, and we hope nothing more than the negative peak get clipped.

## HAMADS

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Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th of the month, and the advertisement must be an advertisement. Calculation of cost is based on an average of six words a line. Call signs are now permitted in Hamads. Dealers' advertisements not accepted in this column.

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**SELL:** Edystone 888, good condition, £200. V.h.f. Receiver, tunes 28 to 100 Mc., £70. Hilliard, 57 Gardena St., Blackburn, Vic. (WX 2498).

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